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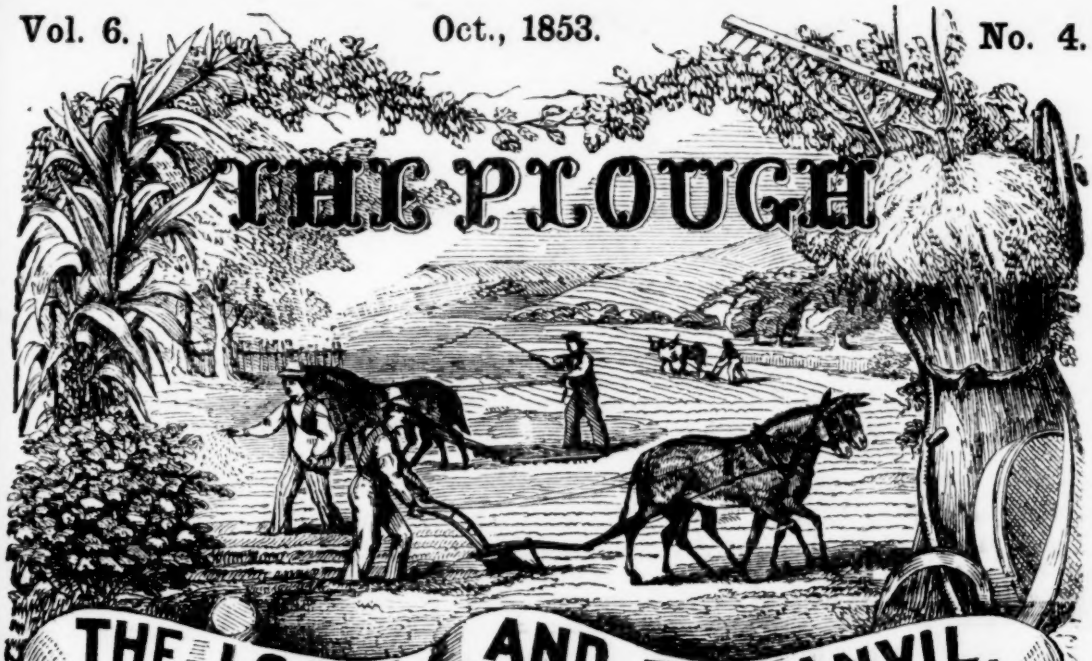
THE PLOUGH



THE LOOM AND THE ANVIL.

FARMER AND MECHANIC.

DEVOTED TO SCIENTIFIC AND PRACTICAL AGRICULTURE—MANUFACTURES—MECHANICS—NEW INVENTIONS—A SOUND PROTECTIVE POLICY—FARM BUILD'NGS—COTTAGE DESIGNS—FRUIT TREES—FLOWERS—GARDENING—BEES, CATTLE, HORSES, HOGS, SHEEP, POULTRY, &c.

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The Plough, the Loom, and the Anvil.

PART I.—VOL. VI. OCTOBER, 1853. No. 4.

FREE TRADE AS AN EXPERIMENT.

IN our last number we gave some exhibitions of the nature and effect of British Free Trade, as illustrated in some of the British colonies, and else where. We propose now to extend this exhibition.

It is true that the English operative, through some cause, buys a loaf of bread now at almost half the price paid for it a few years ago; and the advocates of the British system, in view of this fact, toss up their caps, and shout at the top of their voices. They do not seem disposed to inquire into the real causes which induced this state of things, nor at the inevitable and ruinous consequences that result to other operatives, as needy as he. It matters not whether the Irishman or the Indian gains or loses by this curious mixture of prohibitory taxes and "Free Trade;" taxes which shut out millions from the power to manufacture, and compel them to depend on agriculture, while the door of "Free Trade," for the introduction of agricultural products from all countries, is thrown wide open, thereby diminishing their price in the market, and making the work of farming a profitless business at the best. The result in England is a constant decrease in the number of landholders. The price of crops is not remunerative, and hence the condition of agriculture is unfavorable; and the system which produces such results is, most probably, in the light of this fact alone, unsound in principle. To cheapen labor, in any useful branch of industry, below a healthy, paying rate, is not to the advantage of any community. Could the colonial laborer turn his hand to any other employment, or find a community at home able to buy, it would be comparatively well. But where all are producers, in a small way, and of the same commodity, there can be no purchasers. Hence profitable labor is actually and inevitably an impossibility. This gain in the price of bread, in England, is but an apt illustration of the Irishman's blanket, which, being too short at the top, he cut off at the bottom, and sewed the piece on to the top. This policy may be gain, for the time being, to one class of British operatives "at home," but it is death to many British subjects else where.

So it must be under such a system. If the blanket covers the laborer in England, the Irish laborer is left unwarmed. The only cure that we know of is to get a larger blanket. Change the policy, and the results will change. The consequences of this system on the colonies, as shown in the preceding number, are not accidental, nor temporary. If there is not demand for labor, so as to give profitable employment to a community, it will not be an industrious community. Where a comfortable support is even doubtful, we shall

only witness disaffection, and anxiety, and despair, where there should be cheerful hope, courage, and confidence.

Let us now go on with our illustrations; and first we will take a short view of the state of things in Portugal, as they are related to this policy.

"It is now," says Mr. Carey in his last work, "a century and a half since England granted her what were deemed highly important advantages in regard to wine, on condition that she should discard the artisans who had been brought to the side of her farmers, and permit the people of England to supply her people with certain descriptions of manufactures. What were the duties then agreed on are not given in any of the books now at hand, but by the provisions of a treaty made in 1810, cloths of all descriptions were to be admitted at a merely revenue duty, varying from 10 to 15 per cent. A natural consequence of this system has been that the manufactures which up to the date of the Methuen treaty had risen in that country, perished under foreign competition, and the people found themselves by degrees limited exclusively to agricultural employments. Mechanics found there no place for the exercise of their talents, towns could not grow, schools could not arise, and the result is seen in the following paragraph:—

'It is surprising how ignorant, or at least superficially acquainted, the Portuguese are with every kind of handicraft; a carpenter is awkward and clumsy, spoiling every work he attempts; and the way in which the doors and woodwork even of good houses are finished would have suited the rudest ages. Their carriages of all kinds, from the fidalgo's family coach to the peasant's market-cart, their agricultural implements, locks and keys, &c., are ludicrously bad. They seem to disdain improvement, and are so infinitely below par, so strikingly inferior to the rest of Europe, as to form a sort of disgraceful wonder in the middle of the nineteenth century.'—*Baillie.*

The population, which, half a century since, was 3,683,000, is now reduced to little more than 3,000,000; and we need no better evidence of the enslaving and exhausting tendency of a policy that limits a whole people, men, women, and children, to the labors of the field. At the close almost of a century and a half of this system, the following is given in a work of high reputation, as a correct picture of the state of the country and the strength of the Government:

'The finances of Portugal are in the most deplorable condition, the treasury is dry, and all branches of the public service suffer. A carelessness and a mutual apathy reign not only throughout the Government, but also throughout the nation. While improvement is sought every where else throughout Europe, Portugal remains stationary. The postal service of the country offers a curious example of this, nineteen to twenty-one days being still required for a letter to go and come between Lisbon and Braganza, a distance of 423½ kilometres, (or a little over 300 miles.) All the resources of the state are exhausted and it is probable that the receipts will not give one-third of the amount, for which they figure in the budget.'—*Annuaire de l'Economie Politique*, 1849, 322.'"

Contrast with this description the flourishing condition of Belgium. Here is a small country, about one third the size of Ireland, with a population comparatively larger, and with a soil naturally inferior to that of the Emerald Isle. We are informed that all classes of the people there are prosperous. In the language of Mr. Carey, "the 'Crowbar Brigade' is here unknown, and it may be doubted whether any term conveying the meaning of *eviction* is to

be found in their vocabulary." And what is the cause of this great prosperity? It is emphatically stated by the same eminent writer, that "these people have employment for every hour in the year, and they find a market close at hand for every thing they can raise. They are not forced to confine themselves to cotton or sugar, tobacco or wheat; nor are they forced to waste their labor in carrying their products to a distance so great that no manure can be returned. From this country there is no export of men, women, and children, as we see in Ireland."

"With every advantage of soil and climate, the population of Portugal declines, and her people become more enslaved from day to day, while her Government is driven to repudiation of her debts. Belgium, on the contrary, grows in wealth and population, and her people become more free; and the cause of the difference is, that the policy of the former has always looked to repelling the artisan, and thus preventing the growth of towns, and of the habit of association: while that of the latter has always looked to bringing the artisan to the raw material, and thus enabling her people to combine their efforts for their improvement in material, moral, and intellectual condition, without which there can be no increase of freedom."

There is a vast deal of difference between bringing the artisan to the raw material and carrying the raw material to the artisan. This difference is almost, if not quite, as great as between asking, *Who will buy my goods?* and having our ears greeted with the question, *Will you sell me?*

The German States furnish another illustration of our doctrine. We again cite from Mr. Carey.

"In 1825, Germany exported almost thirty millions of pounds of raw wool to England, where it was subject to a duty of twelve cents per pound for the privilege of passing through the machinery there provided for its manufacture into cloth. Since that time, the product has doubled, and yet not only has the export almost ceased, but much foreign wool is now imported for the purpose of mixing with that produced at home. The effect of this has, of course, been to make a large market for both food and wool that would otherwise have been pressed on the market of England, with great reduction in the price of both; and woollen cloths are now so cheaply produced in Germany, that they are exported to almost all parts of the world. Wool is higher and cloth is lower, and, therefore, it is, as we shall see, that the people are now so much better clothed.

At the date of the formation of the Union, the total import of raw cotton and cotton-yarn was about 300,000 cwts., but so rapid was the extension of the manufacture, that in less than six years it had doubled, and so cheaply were cotton goods supplied, that a large export trade had already arisen. In 1845, when the Union was but ten years old, the import of cotton and yarn had reached a million of hundred weights, and since that time there has been a large increase. The iron manufacture also grew so rapidly that, whereas, in 1834, the consumption had been only *eleven* pounds per head, in 1847 it had risen to *twenty-five* pounds, having thus more than doubled; and with each step in this direction, the people were obtaining better machinery for cultivating the land and for converting its raw products into manufactured ones.

In no country has there been a more rapid increase in this diversification of employments, and increase in the demand for labor, than in Germany since the formation of the Union. Every where throughout the country men are now becoming enabled to combine the labors of the workshop with

those of the field and the garden; and, says Mr. Kay in his "Social Condition and Education of the People of England and Europe," vol. i., p. 256:

'The social and economical results of this cannot be rated too highly. The interchange of garden labor with manufacturing employments, which is advantageous to the operative in his own house, is a real luxury and necessity for the factory operative, whose occupations are almost always necessarily prejudicial to health. After his day's labor in the factories, he experiences a physical reïnvigoration from moderate labor in the open air, and, moreover, he derives from it some economical advantages. He is enabled by this means to cultivate at least part of the vegetables which his family require for their consumption, instead of having to purchase them in the market at a considerable outlay. He can sometimes also keep a cow, which supplies his family with milk, and provides a healthy occupation for his wife and children when they leave the factory.'"

Among the results of this policy, agriculture is constantly making progress, and is carried on with energy and skill. Nearly every man, including shopkeepers, laborers, &c., has his little garden, and as many as possible, a small farm. The consumption of iron has increased from 11 lbs. per head in 1834, to 25 lbs. in 1847.

Where land is valuable, and markets are accessible, there alone can men be free and independent. Elsewhere they are entirely at the control of the capitalists and land-owners, who will exact from them the utmost farthing. Proprietorship is of itself an honorable position, and tends to create energy and excite activity. It is a fountain of light, at which hope is kindled. It guarantees, under the circumstances described, a good reward for labor. The owner of the soil has a home, where he is happy, and he has a country which secures him in the peaceful possession of it. Hence this policy tends to produce good morals in individuals, families and neighborhoods; and this alone can make contented and patriotic citizens.

And what is the inference from the short sketch of facts and results now before the reader? We do not claim that it proves the importance of tariffs, high or low; but it does prove this: that the prosperity of English manufactures is the result, in part, at least, of an almost entire monopoly of the right to manufacture, or a monopoly created by high taxes on machinery, throughout the British colonies, while breadstuff being almost the only thing left the poor and oppressed colonist, he, of necessity, cultivates and sells this to the English merchant at barely living prices, or at higher rates, through agents, and commission houses, who use up all the profit.

He must of necessity supply the raw material or the food for the English manufacturer, who grows rich on his penury. The English operative, while he supports himself and his family on very low wages, adds many fold to the value of the raw material which the colonist has produced but on which he is not permitted to expend any labor, and buys for himself and his family at low prices, the food raised by the same colonist, who is, perhaps, scantily fed and clad, because British policy forbids his applying his strength and skill to those forms of labor which give to England much of her strength, and very much of her resources. This is not the kind of *free trade* advocated in parliaments, nor that contended for in the books.

HISTORY OF THE CATAWBA GRAPE.

As this fruit promises to become one of great importance in the Ohio Valley, it may not be uninteresting to many of our readers to know something of its origin and history. We find the following account of it in an exchange:

My article on the history of the Catawba Grape, published in the first number of the *Western Horticultural Review*, has elicited a lengthy communication from Col. William Murray, of Caloosa Springs, Walker county, Georgia, a brother of the Murray therein alluded to, which fully corroborates the statements there made by Dr. Beach, and now finally settles the question in regard to the origin of this grape. From this communication of Col. Murray, it appears that his father emigrated from Pennsylvania, and settled in the woods on old Kentucky and Warm Spring trail as early as 1801. At that time there were no roads in that country. The farm then settled, and afterwards called Murrayville, is now about ten miles south-east of Ashville, in Buncombe county, N. C., and embraces the forks in the roads, correctly described by Dr. Beach, the locality, as well as the character of the country, it being nearly on the summit-level of the Black Ridge, in latitude 35° 30'., mountainous, thinly timbered, soil poor, with many loose stones and gravel.

At that place, in 1802, Col. Murray says, these grapes were found growing in great abundance; also, another variety, with very long bunches, crowded, and of a dark purple color, but not so delicious as the first, which grew in more open clusters, were larger, and of a more reddish color. After the trees were cut down which shaded them, he says, they were better and grew larger, and have very much improved by cultivation since, and are at this time considered the best grapes in the country.

In 1803, commissioners met at Murraysville to settle a question of disputed boundary between North Carolina and Georgia. On this occasion, these grapes were tested and pronounced good. In 1805, he states that the Friends, or Quakers, from Newbury District, N. C., emigrated to Ohio, and as they passed through this place, took these grapes with them. It would be interesting to learn where they settled in Ohio, and whether they ever succeeded in propagating them there.

In 1807, Gen. Davy, a Senator in Congress, then living at Rocky Mount, on the Catawba river, in the bounds of the Catawba nation of Indians, transplanted some of these grapes to his residence; and sometime between the years 1807 and 1816, he took some of them with him to the city of Washington, gave them the name of the Catawba grape, and disseminated them among his friends in Maryland. From this source it is probable they fell into the possession of Mrs. Schell, from whom Major Adlum obtained them, and made wine of them in 1822. In 1825, he sent the vines with some of the wine to Mr. Longworth, of Cincinnati.

To Mr. John Adlum, then of Georgetown, District of Columbia, are we indebted for its discovery and early reputation as a wine grape, and to N. Longworth, Esq., of Cincinnati, for its introduction in the West, and for the impetus given to its cultivation and the fabrication of wine, which bids fair soon to become an important staple of our country, and to supplant many foreign wines in our market.

For pure, dry, and sparkling wines, the Catawba grape is likely to become to the valley of the Ohio what that celebrated grape which yields the best

Hock wines, those of Johannisberg and Steinberg, are to the Rhine; which grape, it is said, was introduced into that country from Orleans, in France, by Charlemagne.

It may seem to be a matter of minor consideration to be thus particular in endeavoring to trace the origin of a particular variety of vine. But, as thus far it stands without a rival in America in yielding a pure, dry wine, it is a matter of paramount interest and importance to become acquainted with its nature, locality, or habits, especially with a view to understand its nature, habits, and proper cultivation.

From the experience we have had in cultivation, it appears that the soil and situation best adapted to its productive and healthy growth is that which approximates most nearly to its native elements.

On the sides and tops of dry, stony hills, where the soil is loose and porous, it seems perfectly at home, and is little subject to rot or other diseases; the greater the departure from these, its native elements, the more uncertain its culture and perfection of fruit.

In rich alluvial bottoms, the growth is rank and luxuriant, but the fruit is liable to rot, and the vines, in a few years, to decay and become unproductive; clayey uplands, retentive of moisture, are equally uncongenial. In choosing a location for a vineyard, therefore, these points are of much importance, and should be well studied. In the organization and allotment of vegetables, it is a well-known principle of economy that every species and every individual variety of plants have been placed and adapted by nature to a particular soil and atmospheric condition, and very many will not bear a change with impunity. Scientific cultivators are now so well acquainted with these facts, that in transplanting, their chief endeavors are to reduce the condition of things as nearly as possible to their primary elements. The vines of Europe, for instance, will not succeed in the climate of America, when exposed to the variable changes of our atmosphere; hence our intelligent horticulturists are erecting their crystal vineries to shield them from these changes, and to restore to them artificially a climate more in accordance with that of their native home.

S. Mosher.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

INSECTS OF THE SEASON.

The season has thus far been noted for the number and variety of insects preying upon vegetation. First came the cut-worm, devastating corn-fields. He acted without partiality, and set at variance the supposed remedy of fall ploughing to enable the frost more effectually to destroy his eggs. Indeed, the fields which have suffered most from the vexatious gnawings of this worm were those ploughed in September previous. One field we have seen, ploughed at that time, was so injured that it will not produce more than two thirds the amount it would have done if the corn had stood well. Other fields similarly managed have suffered essentially; so we take it for granted that fall ploughing possesses no advantage in this matter. We think it an evil that will show itself under favorable circumstances, let the ploughings take place when they may; and an allowance of seed should always be made, so that the worms may have their portion, and have enough to stock the land.

A careful farmer, who ploughed a part of his field last autumn, and a part of it this spring, who suffered as little from the depredations of this worm as any one we know of, informs us that he attributes his successful escape to the

fact that he soaked his seed in saltpetre and copperas water, a strong solution, previous to planting. There can be no doubt but such a remedy might be successfully employed against insects that prey upon the kernel, and we don't know but it would impart a loathing quality to the blade in the succulent and tender stage, when the worm feasts upon it. This we know, he has a beautiful, even field of corn, while his next-door neighbor, who ploughed all his land in autumn, in consequence of the loss he sustained, will have but a meagre crop. If the solution is a remedy, it is certainly a simple one, and can be tested without much loss of time or money.

The borers, apple, quince, and pear, have threatened for a few years past to destroy as fast as the cultivator could plant. When we first found ourselves the subject of their visitations, our indignation waxed so hot, that we fell upon them with a sharp knife, thinking our trees might as well die from our efforts to save them, as by the invidious borings of a mischievous worm. Our struggle was rather a severe one, but we begin to think we have obtained the mastery; for, where in previous years we have slain scores, we have this year found but three or four. Cut them out, using all care to mutilate the tree as little as possible, and cover the wound you make closely and firmly with grafting-wax. Examine the tree often, and as often as you find evidence of the existence of a borer, *cut it out.*

The Caterpillar.—These are mischievous pests on fruit trees; and they too once opened upon us a war which threatened extermination. We took the hint from their persevering industry, and opened a warfare too, by demolishing their nests until they became tired of building them. Although they have been mischievous as ever to some of our neighbors, even defoliating their trees, we have seen indications of only two nests on our premises, which were destroyed in embryo, while yet the inhabitants were *very young folks.* Yet they were wise enough not to waste strength in making unnecessary repairs, and had respect enough for the value of our time, not to make encroachments upon it for further warfare. It may be that tradition informed them that our forbearance was not without bounds, and they had better yield in an unavailing controversy.

Black knots on Plum trees.—Does any one suppose these are not the work of an insect? If so, whence originates the little grub now to be found in all the excrescences of this year's formation? Our own and nearly all the trees in this region were entirely free from these destructive pests for many years, so that we thought we had a fine plum-growing region, and choice varieties were introduced in rich numbers, when, lo! the summer of 1852 brought the intruder, and in spite of knife and unfailing panaceas, many of our best trees were destroyed. Those that survived did so only to lead to blighted hopes this year, for the plague-spots come out not only on the branches, but on the trunks also; and present appearances indicate a total extermination of all plum trees.

We say we commenced with a hearty good-will a thorough warfare in this business. But of how little use is battling of one or half a dozen individuals on an army of insects, when nine tenths of community fold their arms and say, "It's of no use," and thus give "aid and comfort to the enemy"? If the war of extermination would be waged by every one, and daily carried into the enemy's camp, what hosts of insects would be destroyed, so that the very name of their tribe would be blotted out. But, with the indifference too many manifest, they go on until they deprive us of comfort, destroy our trees, and die out because they have no more mischief to do.

Yours truly, W. B.

Richmond, Mass., August 15, 1853.

SUPERPHOSPHATE OF LIME.

We are aware of only one opinion in respect to the use of the phosphates as fertilizers, and the superphosphates are of still greater value. These fertilizers are to be had in the markets, and are no doubt worth buying even at high prices. But farmers can manufacture them on their own premises at a much cheaper rate than they can purchase them of regular dealers. Besides, we believe in the doctrine of INDEPENDENCE. We would have all our citizens as little as possible at the control of others, in all their business operations. We would have them able to manufacture all the manures, and carry on their farm operations by their own scientific and physical resources. It may not be unwise, but highly expedient, in the preparation of some of these artificial manures, for neighbors to go in company or in shares, especially where much cost or trouble in the way of preparation for the work is required. So a partnership, to some extent, in the trying of experiments may sometimes relieve one party from loss, if unsuccessful, and create an interest in the subject on the part of his neighbor, who would not otherwise *meddle* with such matters.

In the preparation of bones for these uses, the following simple mode will be found convenient and effective:

Provide a couple of large tubs, by sawing into two parts a large barrel or hogshead. These should be placed in a situation where the fumes of the sulphuric acid will not be likely to enter the dwelling-house, or incommode any animals. The fumes should always be avoided, as, if inhaled into the lungs, they are highly injurious, producing an extensive inflammation of the inner membrane of the windpipe and the organs below it.

In the tubs thus provided, the bones, previously broken into small fragments, are to be placed after their weight has been ascertained. They may be filled within fifteen inches of the top. Then moisten with about one fifth their weight of hot water, from a watering-pot, stirring them thoroughly. After a short time, they become uniformly and completely saturated. As soon as this is done, add the sulphuric acid, in quantity from forty to forty-five per cent. of the weight of the bones. The acid must be very cautiously handled, to avoid danger to the person and clothes. Then stir up the bones with a fork, and in doing this, stand to the windward of the tub, so as to lessen the danger from the effervescing liquid. After the bones have been carefully turned over, the tub may be covered with an old cloth to preserve the heat, and left twenty-four hours, by which time the process will be completed.

If raw bones are used instead of bones that have been boiled, ten per cent. less of acid will be sufficient. It is of importance to attend to this, as the acid is much the greatest ingredient, and when more than enough is used, it is completely lost—its only use being to render the phosphate soluble. Oil of vitriol is commonly used, but brown acid is more economical. The strength of the oil of vitriol and of brown acid, or, in other words, the amount of pure sulphuric acid which either of them contains, is known by their specific gravity. In Professor Way's calculations, he reckons their weight as one seventh compared with one of water. If brown acid be used, about a fourth more quantity is required than of oil of vitriol.

Any dry absorbent substance which does not contain much carbonate of lime will do for mixing with the superphosphate after it has been a day in

the tub. A layer of ashes, or dry saw-dust, may be laid on the floor beside the tub, six inches deep. Upon this layer place a quantity of dissolved bones with a spade, then another layer of ashes or saw-dust, alternating with the bones until the tubs are empty. "The compound heap is now sliced down with the spade, a little at a time, and thoroughly mixed and made small with an iron rake. After having gone over it once, the same process should be repeated immediately, at any convenient time thereafter, adding more ashes or saw-dust if it is not dry enough, after which it will be in a fit state for sowing."

In calculating the amount to be applied to the crop, if the compound contain, say a ton of bones, it may be regarded as equal to twenty-eight cwt. of Peruvian guano. When the bones are prepared for light land, it is advisable to use a rather less proportion of acid. The process is thereby cheapened; and if small fragments of bones remain undissolved, they are highly useful in that state for sustaining the autumn growth of the crop.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CHEMICAL ANALYSES OF SOILS.

MESSRS. EDITORS:—I have frequently noticed statements in your journal, as well as in other periodicals, that farmers are not willing to expend a dollar for the analysis of their soils.

The reason of this is, in many cases, that they do not understand the proper steps to take, to effect this analysis.

There are many fine farms on the Androscoggin river, and farmers here are beginning to feel the need of practical agricultural knowledge. Perhaps this may be obtained by frequent experiments with crops, and close observations. But the directions for the proper analysis of our intervale soils would be thankfully received by A SUBSCRIBER.

Oxford Co., Maine.

REMARKS.—We had designed to give our views somewhat in detail on the subject referred to in this note, but have deferred it to the present time. The above inquiry from our friend may be properly used to give these views with some particularity.

1. Accurate chemical analyses, in our view, are often of great value to the farmer. In former numbers we have given illustrations of this, and repeat one here, by way of sample. A field of an eminent farmer of this State was carefully cultivated and sown with wheat, but did not produce enough to replace the seed. A chemical analysis exhibited an entire absence of phosphoric acid. This, and this alone, was furnished, and the next crop of wheat was thirty or forty bushels per acre. Such facts might be multiplied indefinitely.

On the other hand, it is obvious that actual analysis is not the only mode of ascertaining the capacity of the soil. As in bookkeeping, a trial balance may be made out, when some of the entries, ordinarily used for this purpose, are lost, so the farmer is not confined to a single process. For example:—

Suppose you have a field, like one of the *sandy soils* spoken of on page 103, August number, containing fifty to eighty per cent. of clay, ten or twenty of lime, and a mixture of humus; and suppose the crops that have been raised

are well known, with the treatment it has meanwhile received. The intelligent farmer will see at once what elements must have been used up, by those crops, and of course what manures are required.

"But how shall we know that the field in question ever was in the state above described?"

We answer, each section of our country has its known geological character. In one wide section, perhaps, the sands are almost entirely silicious; in others well mixed with clay. If there is a "State Report" on this subject, it will, no doubt, contain the information required. And again, by dissolving a portion of the soil, as described on page 103, just referred to, the result may be sufficiently exact. So, too, the process there described may detect the presence of carbonate of lime.

But another test is perfectly obvious. Suppose the soil is chiefly sand, and has never produced good crops. Recurring to the fact we have heretofore explained, that certain crops exhaust certain elements (see page 149, September number,) and that all the elements required are few in number (see July, 1852, page 22, and August, page 100,), and that silex, at least, and perhaps some other elements, obviously remain; the missing ones, within certain limits, are a matter of necessary inference.

But another remark is also obvious. The matter, in time, may be practically tested, and the process referred to may be used after the manner of some of the problems in bookkeeping. If the soil is of uniform quality, divide it into narrow sections, and sow seed of opposite characteristics. The comparative growth of clover seed, peas, oats, &c., being plants which require different elements, would test the presence or absence of potash, soda, and lime; phosphoric acid, magnesia, &c., and be a guide for future action.

So, too, the character of the spontaneous growth is often indicative of the character of the soil. This fact was explained on page 23 of our number for July, 1852, and, within the limits there implied, is one of unquestionable value.

But why so many suggestions, some of which are so uncertain and indefinite, in their results? Because we add, as an important suggestion on this subject, another fact, equally important, in considering how we shall test the composition of our soils, to wit:

We have very little confidence in the entire accuracy of a large proportion of the pretended analyses, even when made by professed chemists. One of our most learned and practiced chemists, who is also an eminent geologist, once remarked to us that he could not make an analysis of soil, at all reliable, in less time than six weeks. No authority is more frequently appealed to on kindred subjects than this gentleman. We know the assertion will be laughed at by scores of chemists, who can tell you *all about it* in a few hours; but we are quite willing to put the laugh side by side with the observation, and let each go for what it is worth.

We do not mean to condemn as worthless those analyses that are not very accurate. Those processes which we have pointed out for the farmer himself to attempt are of substantial value, and really worthy of frequent experiment, and sometimes as valuable as the report of the professor of chemistry, while "five dollars" will buy many pounds of *guano* or of *poudrette*, or of the *improved superphosphate*.

The result of all our own reflections and observations is, that it is best for the farmer with limited means to use his money in buying manures, and making composts, and in improving his lands, under such examinations of his soil as we have described, rather than in paying for many analyses of differ-

ent soils of which he may be the owner. If he can do the last, in addition to the former ones, so much the better. Much good may come of it, but let him be cautious whom he employs.

For our Eastern friends we are unable to point out any chemist nearer to them than New-York, who holds himself up to the public as always prepared for such service, at a very low rate; though we do know that an analysis by Dr. C. T. Jackson, or by Mr. Teschmacher, of Boston, with which they would themselves be satisfied, would be entirely reliable. In New-York there are several who devote themselves to such business, and who, for "five dollars," give the analysis. In Albany we have Prof. Salsbury. Farther South, we know of only Dr. R. Stewart, of Baltimore. Others, no doubt, are equally competent with these, though unknown to us. Select a fair specimen from the surface, another six or eight inches below the surface, and also a specimen of the subsoil;—a quart or two of each, and forward as you please.

We shall be happy to act as agents for any of our subscribers, in obtaining such analyses, and will select the most reliable chemist in our power. The cost of freight, and of the work performed, &c., should be sent with the soil.

KENTUCKY FARMS AND FARMING.

The following extracts are from a letter by M. Bateman, editor of the *Ohio Cultivator:*

From Louisville we made an excursion to Lexington, which is about the centre of the best farming district in Kentucky, and we might almost say in the Union; for it is difficult to find a more beautiful and fertile region than is included in Fayette, Bourbon, and one or two other adjoining counties in this State; and as a large portion of the lands in other parts of the State are not of very good quality, the owners of farms in this favored district are sensible of their advantages, and are regarded by all as the aristocracy of the State. The farms are generally large, consisting of several hundred acres each, and are worth from $70 to $100 per acre; then, if we include the value of the stock usually kept, it is obvious that to be a farmer here requires no small amount of capital. Whether or not the business affords as much profit for the capital invested as is usual in Ohio and other Western States, we have some doubts; and we found on conversation with several of these Kentucky farmers, that they were by no means satisfied on this point.

The scenery of this part of Kentucky is quite different from and more beautiful than the most fertile portions of Ohio. The lands are more undulating, with broad and gentle slopes, interspersed with groves of majestic trees, beneath which the blue grass forms a rich turf, and the herds of stately short-horns luxuriate with even more than Durham thrift and fatness. The soil is a limestone clayey loam, of a dark brown color, nearly resembling in quality what is called *second bottom* in Ohio. The greater portion is devoted to grazing, as stock raising is the favorite pursuit; and here we find in perfection the *blue grass pastures*, of which so much is said, and which are no where equalled for productiveness and beauty. So remarkably fine and large is the growth of this grass here, that many persons have been led to suppose it is a different variety from that which abounds in Ohio and other States, (sometimes called *June grass*,) but the wisest botanists have pronounced it the same, (*Poa pratensis;*) and we have known several Ohio farmers who

have procured seed from Kentucky for sowing their pasture lands, and the product was not different from the native growth. It is evident, therefore, that it is the superior adaptedness of the Kentucky soil for this grass which makes the difference; and it is only where similar soil can be found in Ohio that we can expect to make blue grass pastures like those of Kentucky. To sow Kentucky blue grass seed on flat, cold, clay soils, as we have seen done, almost without any preparation, with the expectation of forming blue grass pastures like those of Kentucky, is about as reasonable as to expect to raise a herd of Kentucky Durhams from a lot of native scrub calves.

Fine cattle, as well as fine lands, our readers are aware, have been the boast of this portion of Kentucky; and we noticed, in passing, that even the common race of cattle in these parts partake so largely of Durham blood as to give them more the appearance of English stock than we have any where else seen in this country, and quite a number of the herds bore evidence of having been bred with much care and skill. On the farm of Mr. Istelle (one of our subscribers,) we found half a dozen fat Durham steers, that for symmetry, size, and fatness, were almost equal to any that we saw at the Royal Show in England. He had just refused $700 for the lot, and said he would not sell them till after the fall exhibition, when they would probably be sent to New-York for Christmas beef.

On the farm of Mr. Kinnaird, about eight miles from Lexington, we saw a number of cows and heifers, which have never been excelled at the shows of that region, and we think would be hard to beat at any others in this country. If the new importations from England are shown to excel these, it will be worth a trip from Ohio to see them. Mr. Kinnaird is a young farmer of much intelligence and enterprise, and has one of the most beautiful farms in that very beautiful region. Besides fine cattle, he has a lot of South Down sheep, some of them immediate descendants from the noted Webb flock of England; also, some good Berkshire and other hogs. In one of his pastures we noticed an acre or more of the *meadow fescue*, or, as it has been called, "English blue grass." It was grown the past year from seed sent to him by a friend in Virginia, who did not know its true name. This grass has never before been tried in that region, and we think it may prove highly valuable there, especially for winter pasture. We shall be pleased if Mr. Kinnaird will inform us next winter how this variety compares in color and hardiness with the common blue grass.

Mules are a very popular kind of farm stock at the present time in Kentucky, and large prices are obtained for them in the Southern markets. Some of these animals that we saw—as on the farm of Mr. Childs—were very large and sleek, but we confess to no great admiration of them.

Fast horses have in former years received much attention in this region, but of late only a few gentlemen of the sporting profession are particularly interested in blooded stock of this class. J. B. Clay, Esq., son of the late honored Senator of Ashland, has several very celebrated horses among his stock, and is well known for his devotion to the sports of the turf. Much good blood has been infused into the horse stock generally throughout Kentucky by means of the numerous fine horses introduced there years ago.

A new *Cattle Importation Company* was formed in the vicinity of Lexington the past winter, the agents of which, after spending much time in making selections in England, have just returned, and report that they have on the way about forty head of the very finest short-horns, some Cotswold sheep, and a Cleveland bay stallion. These are to be disposed of by auction the coming fall, and will no doubt prove highly valuable in sustaining the

high reputation of this region for fine stock. We learn, also, that a Mr. Alexander, of Woodford county, Ky., has been spending some months in England, purchasing on his own account some of the finest cattle to be found there without regard to cost. It is the avowed determination of the wealthy and enterprising stock farmers to make this portion of Kentucky the greatest centre of really fine stock in the Union; our Scioto friends will therefore have to look sharp to their laurels.

There are two active and spirited Agricultural Societies in this region: the Bourbon Society having its exhibitions at Paris, and the Kentucky Society at Lexington. Both, we believe, embrace several counties in their membership, and allow competition from all parts of the State. The annual fairs of these Societies are designed for the *sale* and *exchange*, as well as the exhibition of stock; and when the numerous railroads now in progress at the South and West are completed, it is anticipated that many persons from other States will be present at these fairs. There is also a good Society in operation in Shelby county; and on the day that we were in Louisville, we attended a meeting of the friends of agriculture, at the court house, for the purpose of organizing a Society for that region. A constitution was adopted, and from the degree of interest manifested, there is no doubt but that the Society will be successful. It is called the Western Kentucky Agricultural Society; and it is the design to hold a grand fair at Louisville the coming fall.

ARTIFICIAL GUANO.

The following has proved itself a good substitute for guano:

	lbs.
Bones, dissolved in spirits of salt,	18¾
Charcoal powder,	18¾
Sulphate of ammonia,	9½
Common salt,	9½
Gypsum,	9½
Wood ashes,	46
Nitrate of soda,	28
Sulphate of soda, (Glauber's salts,)	10
Sulphate of magnesia, (Epsom salts,)	10
	108

Five hundred pounds to the acre is a proper allowance. The constituents should be well mixed together, and used as guano is used.

HOW TO SUBDUE A VICIOUS HORSE.

On looking over some old papers the other day, we came across the following, which, if true, is worth knowing. It seems that a fruitless effort was being made in a blacksmith shop to shoe a vicious horse, which resisted all efforts, kicked aside every thing but an anvil, and came near killing himself against that, when, by mere accident, an officer returned from Mexico was

passing, and being made acquainted with the difficulty, applied a complete remedy by the following simple process:

He took a cord about the size of a common bed-cord, put it in the mouth of the horse like a bit, and tied it tightly on the top of the animal's head, passing his left ear under the string, not painfully tight, but tight enough to keep the ear down and the cord in its place. This done, he patted the horse gently on the side of the head, and commanded him to follow, and instantly the horse obeyed, perfectly subdued, and as gentle and obedient as a well-trained dog; suffering his feet to be lifted with entire impunity, and acting in all respects like an old stager. The simple string, thus tied, had made him at once as docile and obedient as any one could desire. The gentleman who thus furnished this exceedingly simple means of subduing a very dangerous propensity, intimated that it is practised in Mexico and South America in the management of wild horses. Be this as it may, he deserves the thanks of all owners of such horses, and especially the thanks of those whose business it may be to shoe or groom the animals.

CHEESE MAKING.

This is a subject on which we need the practical experience of all who are successful in the business. A really good cheese is only obtained by a due regard to a great variety of details. How many of these there are, and what they are, are the great points on which we need light; and by a knowledge of these, to the exclusion of other immaterial matters, we may, by and by, supply our markets more abundantly with what is really worthy the name of cheese. We have given the "Swiss mode of making Cheese," on page 142; we here add, for the purpose of giving a fuller view of the subject, an article from an Ohio farmer, who seems to have had great experience, skill, and success in this important branch of operations on the farm:

"A *system* is essential, and every successful dairyman must have his own, though never to deviate from certain fixed principles. Although the quality of cheese in our section is yearly improving, yet very many of our dairymen are sadly deficient. The most essential requisite, that pertains to a dairy, is extreme cleanliness; and only such vessels should be used as will readily admit of being thoroughly washed and scalded every time they are used. A very small quantity of putrescent milk will cause any fresh milk rapidly to sour when exposed to its influence.

The dairy-room should be dry, cool, and airy, easily ventilated, wholly above ground, shaded by trees, windows protected by shutters, opened nights and closed during the day, to prevent dry currents of air, that will cause the rind of cheese to crack, also to keep the temperature of the room below 80 deg. Sweet milk holds sugar and casein or cheese in solution with water, and the butter of the milk floats in it. One great point is to separate the cheese from the water or whey, and with it as much butter as possible. The milk, at a high temperature, will soon change its sugar into lactic acid, and a low one will retard it, though not prevent it. The evening's milk intended to stand till morning, should therefore be cooled to near 60 deg. to prevent souring; also to free it of the animal odor, or pasture flavor, so offensive to many persons. The cream should be taken off in the morning and made into butter; as it occasions a waste of nearly thirty-three per cent. of the butter in manufacturing, if left with the milk. The vat should be large

enough to hold the milking of one day, and made of tin, inserted in a wooden one, leaving a space all around, at top and bottom, for hot or cold water. After straining the morning's milk, the temperature should be raised to about 80 deg. in common summer weather, and to 86 or 90 deg. in cold weather, in May, October, and November. If raised above this, more butter is likely to be separated from the curd, and if below, a perfect coagulation of the milk is not as sure; at least, this seems to be a point requisite for perfect coagulation. The practice of heating a part of the milk in a kettle over a fire, in order to bring about the right temperature for setting, should be avoided. Besides the danger of scorching a part of the butter, the richness and value of the milk is sure to be lost in the whey, as will be seen by the quantity of cream afterwards rising. Sufficient rennet should now be added to produce perfect coagulation in thirty minutes; taking care that the rennet be concentrated and active, or the curd will be soft and pulpy, causing much waste. After adding the rennet and thoroughly mixing it, the milk should be tightly covered, to prevent the temperature from varying, and be left perfectly quiet, free from sudden jarring. When the milk is perfectly coagulated, it is known by its parting smooth and clean by passing the finger through it. Cut in in inch squares with a long knife, that will reach to the bottom of the vat. Let it stand fifteen minutes, or more, then pass the hands several times through the curd to the bottom, gently moving it, after which, the whey will rise more rapidly.

During the warm months, the curd should be rid of whey at the earliest possible moment, taking exceeding care not to cause any white whey to run. So long as whey remains in the curd it is sure to impart an acidity, which tends to a greater waste in manufacturing; though the best quality of cheese is often made from sour curd. At this stage, let the whey pass off through a cullender, at the end of the vat, and commence dipping the curd back with a sharp tin scoop, that will cut its way free and smooth. It would prove a saving to press the whey through a fine linen strainer. Avoid breaking or mashing the curd, and the whey will pass off green and pure.

The western practice of driving the heat, and whirling up the whey and curd, or what is familiarly known as the "quick way," will make a softer cheese while green, and will cure earlier, but less firm, more porous, will shrink more in weight, consequently a lighter yield and not as rich. A cheese rightly made of eighty or one hundred pounds should shrink, in curing five months, about seven per cent.; but made the "quick way," will commonly shrink from fifteen to twenty per cent. This may be known as true—the greater the shrinkage, the greater the mould, and the more likely to adhere to the shelves.

The manner of separating the whey is the most important point, involving the richness, which in market is every thing, of the cheese. Richness requires that as much as possible of the butter be chemically incorporated with it. If it merely adheres to the curd mechanically, it is easily washed off with the whey, and here you have it in the form of whey butter, which should be scarce where good cheese is made. When thoroughly drained, cut it in about half-inch squares, taking care that the pieces are uniform in size; add warm whey, if sweet, at about 116 deg., otherwise use soft water, taking care that it does not come in contact with much curd while too hot, till the whole mass be raised to 100 deg. At this point check the scalding process by adding cold water, taking care not to reduce it below this point. Then cover and let it remain till every piece be warmed through; known by touching the end of the tongue to a broken piece. Draw off the whey as

dry as possible; and, while warm, add one common sized tea-cup full of finely pulverized salt to sixteen pounds of cheese, green from the press. Great care should be taken that the salt be thoroughly incorporated. This will cause more brine to run off, and should be collected to replenish the rennet-crock daily. The above process cannot be completed successfully very early in the day. Hurrying cheese into the press will cause it to be dry and crumbly, or having a pungent smell, giving it a sharp biting acid flavor, injurious to its sale; or, which is worse, leaky and huffy. Rich cheese requires time and care in the operation. One writer says, that out of every 100 parts of new milk $3\frac{1}{8}$ are butter, and $4\frac{1}{2}$ are cheese. This I think to be a light yield. Ten pounds of milk should produce one of cheese, firmly made, and some parts of the year a greater yield should be realized. After moderately pressing from six to ten hours, fit a bandage on tightly, which will extend over the edges about one inch. The edge should be compressed by gathering the bandage, and tying firmly with strong twine, to give them a rounding appearance on the shelf. Pressing on the bandage will prevent it from ruchling up as one cheese cures, leaving a harbor for flies or black mould. In twenty-four hours remove to the shelves, leaving a heading of cloth pressed on at top and bottom till quite dry, to prevent cracking.

Apply evenly and thoroughly, hot whey butter, and rub it in. The grease should be colored, giving the exterior a bright orange color, and may be prepared by dissolving annetto in weak soap-suds, hot, and simmered over a slow fire. The color will be transmitted to the butter as the water evaporates. Then, in order that every good dairyman may have his due credit, he should have some mark imprinted on the bandage before greasing; for it should be borne in mind, that in a perishable article like cheese, a preference in sales at market is of itself a profit, and well worth an effort to command by superior quality, even though no extra price be obtained.

A thin flat cheese is not commonly fancied; 6 inches deep, 16 in diameter, weighing about 42 pounds; 7 inches deep, 18 in diameter, weighing 63 pounds; 8 inches deep, 20 in diameter, weighing 85 to 100 pounds, are the most fancied styles for cutting cheese.

CURE FOR GARGET.

The following case is reported in the *Boston Cultivator*. It is from the pen of Dr. Eben Wight, of Dedham; and as we have the pleasure of his personal acquaintance, we assure our readers that he is as reliable a witness as any man living; and his opinion—of great value on any subject on which he will make that opinion known—is worthy of entire respect. Dr. Wight says:

At the solicitation of a friend, who has saved a valuable cow from the hands of a butcher, I am induced to make known through your columns a remedy for the garget. Some years since I met with a fine imported Durham cow on the way to the butcher, the owner parting with her in consequence of her being afflicted with the garget. The owner had tried all the usual modes of eradicating the disease, after which he put her under the charge of a distinguished veterinarian, who, after a six-months' attendance, discharged her as incurable.

Deeming her a good subject for a treatment with iodine, and not knowing whether it had been used in the case, I purchased her at what she was worth

for beef. At that time she gave but a few drops of milk at a time from one teat; the other had ceased to yield any: the udder and teats were swollen and hard. I determined to make use of iodine in the form of hydriodate of potash, being solvent in water, and if it failed to exhibit its effects on the system, I would resort to an ointment, (20 grs. iodine to 1 oz. hog's lard,) applied externally to the udder and teats. I commenced by giving 10 grs. of hyd. potash in a tablespoonful of water, three times a day, mixed in a mash of shorts and meal; and though the dose was unusually small for a cow, still, as it was giving unmistakable signs of effect,* I did not increase the dose. In seven days she gave milk freely from each teat, and in three weeks she was discharged as cured. The result in the foregoing case was so favorable, that I advised my neighbors who had cows afflicted with the garget to make a trial of the same remedy. I have known of its trial in at least forty cases, and in every one the cure has been effected with even the above-named small dose. A larger quantity could be used with safety.

Any one acquainted with the effect of iodine on the human system, knows its tendency to produce an absorption of the mammæ. Dr. R. Coates, of Philadelphia, reports a case in the *Medical Examiner*, of the complete absorption of the female breast from iodine; but the mammæ recovered their original development after the lapse of a year. Iodine is principally employed in diseases of the absorbents and glandular systems. (See *U. S. Dispensatory.*)

Hydriodate of potash can be procured of any apothecary, and dissolved so as to allow 10 grs. to each spoonful of water, increasing the doses till it gives effect on testing the urine. EBEN WIGHT.

Dedham, June 25, 1853.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

ON MANURES.—WILLARD'S BROMUS.

To Mr. Alanson Chase and his Son, (Business Partner,) Clinton, Mass.:

MY long-cherished friendship, and interest for the improvement of your noble homestead, induces me to give you this letter of suggestions, through *the Plough, the Loom, and the Anvil*, and the number containing it, which I shall order sent to you, hoping you will subscribe for it, show it to your neighbors, and, as I have done, find unmingled pleasure and profit from its rich and varied contents, as a monthly visitor.

In my last call at your place, among other things, your spacious new barn and cellar pleased me much. Besides all the *solid* manure of cattle and horses, litter, muck, and other carbonaceous matter, composted under it, with frequent sprinkling of salt and plaster, preventing the escape of gases, you may save an equally valuable amount of fertilizing *liquid* by the plan and process I would recommend. (I know a little outlay would be nothing with you, by which the health of the family and of all the animals may be promoted; and besides cleanliness and neatness in the yard, you would obtain such an amount of fertilizing material as to give waving luxuriance and beauty to surrounding fields.) It is to build a *cistern* some distance from the barn, low enough and large enough to receive drainings from the lowest part

* Hydriodate of potash passes quickly into the secretions, especially the urine. It may be detected in the latter by first adding to the cold secretion a portion of starch, and then a few drops of nitric acid, when a blue color will be produced.

of the yard, all the wash from summer showers, and melting snow in spring; covered with a roof, and furnished with a pump high enough to admit a cask on wheels under its spout, after the manner of a city road-sprinkler. To this cistern, which may be of plank, or of hard brick, laid in hydraulic lime, carry all the wash from the house, not excepting the privy; which, if its contents are in a tight box, often supplied with water, into which disinfecting materials are stirred, will go off with the rest without offense or difficulty, in suitable pipes or troughs. I reckon cast iron troughs the best, made like two strips of board nailed together, each three inches wide, or more, according to circumstances, being simple, roomy, and durable. They may be covered with a board, and cleaned easily. Let such be placed back of all the stables, and the urine thereby be carried to the cistern. You may ask if the amount gained by *irrigation* would equal the extra cost of application, as most of the urine *might be* conveyed to the compost.

By the *best* management in compost, considerable is lost by running away—by evaporation—by being too strong—by the drying and hardening of lumps saturated with urine—by the difficulty of *complete pulverization* when once dried—by the want of equal distribution—by not bringing it in contact with all the roots, it being sometimes too deep and sometimes too near the surface; and again by drought.

As all plants take their food only when it is in a soluble state, IRRIGATION, at proper times, and in a proper manner, is highly advantageous. Its action upon the foliage enables it to take advantage of atmospheric influences, while it also secures the whole plant from the effects of general drought. But what is applied in this manner should be applied equally over the surface, and at the most favorable times. It can be repeated without disturbing the soil, and a given amount of nutritive matter can be applied in this superior manner, and timely, with less labor. The pipes, cistern, and machinery, once prepared, are durable.

Such being their advantages, I think those who procure and use them soonest are the wisest. They *get good*, and by their example and extended influence *do good*.

Permit me to add some information and sentiments obtained from gentlemen visiting England, and from my own correspondence. Mr. Dickinson keeps a few cows and many job-horses in London. His stable is a pattern of neatness, and his farm, five miles out of the city, a sample of beauty and productiveness. He sells all his solid manure to farmers, but conveys all the urine to a *tank* some distance from the stable, by underground troughs, for his own use. He dilutes the urine in the tank variously; sometimes by mixing twice the quantity of water, and even more; and says, if it were not so far to cart, it were better for dry land, or dry seasons, to add eighty per cent. of water, provided the same amount of urine were applied. He keeps all his stock on the "improved Italian rye grass," raised on this farm, of which there are hybrids, at least one hundred varieties. He thinks himself quite favored in the kind he has obtained. I am quite satisfied that it nearly resembles my Bromus, which I think unsurpassed, if not *unequalled, by his, or any other.* He begins early to irrigate his lands, and mows three times, and part four times, applying his liquid after each mowing. *No other fertilizer!* The growth is very uniform, and about three feet each time. He uses what he wants *green*, and dries the rest; speaks of it as the best feed for horses, and thinks nothing so good for milch cows, or sheep and lambs, green or dry. Coleman, in his "Reports on European Agriculture," who visited Mr. Dickinson's farm and stables, fully endorses these views, and highly recommends his course to American farmers.

I think, Mr. Chase, as you have so much land in proximity to your barn and the sink is so well adapted to irrigation, and summer soiling, you may commence with fair prospects at once. Call on me, and I will show you the *Willard Bromus* growing, covering the ground like a fleece, and hay of large size, first and second crop. I have had three tons per acre at one cut. It is often six feet high at maturity. The sooner you turn over one or two acres of your lightest grass land, and take this seed and sow, the better. Autumn is Nature's time for seeding. It will do well after corn and potato harvest. Should you wish any of my views as to fixtures or field-culture, when able, they are available. This is my first writing since my long and painful confinement with bilious colic. I was anxious to prepare it in season for the September number, for your sake and others, and have laid down many times while doing it. May it be seasonable, acceptable, and useful.

Yours truly, BENJAMIN WILLARD.

Lancaster, Sept. 1, 1853.

[The above was not received till our September issue was through the press.—ED.]

LAYING DOWN TO GRASS.

BELOW we give an extract from "The Elements of Agricultural Chem istry," by Professor Johnston, soon to be published by Mr. Saxton, of this city.

IMPROVEMENT OF THE SOIL BY LAYING DOWN TO GRASS.—FACTS WHICH HAVE BEEN ASCERTAINED.

On this subject two facts seem to be pretty generally acknowledged:

First, That land laid down to artificial grasses for one, two, three, or more years, is in some degree rested or recruited, and is fitted for the better production of crops of corn. Letting it lie a year or two longer in grass, therefore, is one of the received modes of bringing back to a sound condition a soi that has been exhausted by injudicious cropping.

Second, That land thus laid down with artificial grasses diminishes in value again after two, three, or five years—more or less—and only by slow degrees acquires a thick sward of rich, nourishing, natural herbage. Hence the opinion that grass land improves in quality the longer it is permitted to lie, the unwillingness to plough up old pasture, and the comparatively high rents which, in some parts of the country, old grass land is known to yield.

Granting that grass land does thus *generally* increase in value, three important facts must be borne in mind before we attempt to assign the cause of this improvement, or the circumstances under which it is likely to take place, for the longest time and to the greatest extent.

1. The value of the grass in any given spot may increase for an indefinite period, but it will never improve beyond a certain extent; it will necessarily be limited, as all other crops are, by the quality of the land. Hence the mere laying down to grass will not make *all* land *good*, however long it may lie. The extensive commons, heaths, and wastes, which have been in grass from the most remote times, are evidence of this. They have, in most cases, yielded so poor a natural herbage as to have been considered unworthy of being enclosed as permanent pasture.

2. Some grass lands will retain the good condition they thus slowly acquire for a very long period, and *without manuring*, in the same way, and upon nearly the same principle, that some rich corn lands have yielded successive crops for one hundred years without manure. The rich grass lands of England, and especially of Ireland, many of which have been in pasture from time immemorial, without receiving any known return for all they have yielded, are illustrations of this fact.

3. But others, if grazed, cropped with sheep, or cut for hay, will gradually deteriorate, unless some proper supply of manure be given to them, which required supply must vary with the nature of the soil, with the kind of stock fed upon it, and with the kind of treatment to which it has been subjected.

FORM WHICH THE IMPROVEMENT ASSUMES, AND HOW IT IS BROUGHT ABOUT.

In regard to the acknowledged benefit of laying down to grass, then, two points require consideration:

1. What form does it assume, and how is it effected?

The improvement takes place by the gradual accumulation of a dark-brown soil, rich in vegetable matter, which soil thickens or deepens in proportion to the time during which it is allowed to lie in grass. It is a law of nature, that this accumulation takes place more rapidly in the temperate than in tropical climates; and it would appear as if the consequent darkening of the soil were intended, among other purposes, to enable it to absorb more of the sun's warmth, and thus more speedily to bring forward vegetation where the average temperature is low and the summers comparatively short.

If the soil be very light and sandy, the thickening of the vegetable matter is sooner arrested; if it be moderately heavy land, the improvement continues for a longer period; and some of the heaviest clays in England are known to bear the richest permanent pastures.

The soils formed on the surface of all our rich old pasture lands thus come to possess a remarkable degree of uniformity, both in physical character and in chemical composition. This uniformity they gradually *acquire*, even upon the stiff clays of the lias and Oxford clay, which originally, no doubt, have been left to natural pasture, as many clay lands still are, from the difficulty and expense of submitting them to arable culture.

2. How do they acquire this new character, and why is it the work of so much time?

When the young grass throws up its leaves into the air, from which it derives so much of its nourishment, it throws down its roots into the soil in quest of food of another kind. The leaves may be mown or cropped by animals, and carried off the field; but the roots remain in the soil, and as they die, gradually fill its upper part with vegetable matter. On an average, the *annual* production of roots on old grass land is equal to one third or one fourth of the weight of hay carried off,* though no doubt it varies much, both with the kind of grass and with the kind of soil. When wheat is cut down, the quantity of straw left in the field, in the form of stubble and roots, is sometimes greater than the quantity carried off in the sheaf. Upon a grass field two or three tons of hay may be reaped from an acre, and, therefore, from half a ton to a ton of dry roots is annually produced and left in the soil. If any thing like this weight of roots die every year, in land kept

* See the author's Lectures on Agricultural Chemistry and Geology, Second Edition.

in pasture, we can readily understand how the vegetable matter in the soil should gradually accumulate. In arable land this accumulation is prevented by the constant turning up of the soil, by which the fibrous roots, being exposed to the free access of air and moisture, are made to undergo a more rapid decomposition.

But the roots and leaves of the grasses contain earthy and saline matters also. Dry hay leaves from an eighth to a tenth part of its weight of ash when burned. Along with the dead vegetable matter of the soil, this inorganic matter also accumulates in the form of an exceedingly fine earthy powder; hence one cause of the universal fineness of the surface-mould of old grass fields. The earthy portion of this inorganic matter consists chiefly of silica, lime, and magnesia, with scarcely a trace of alumina; so that, even on the stiffest clays, a surface soil may be ultimately formed, in which the quantity of alumina—the substance of clay—is comparatively small.

There are still other agencies at work by which the surface of stiff soils is made to undergo a change. As the roots of the grasses penetrate into the clay, they more or less open up a way into it for the rains. Now, the rains in nearly all lands, when they have a passage downwards, have a tendency to carry down the clay with them. They do so, it has been observed, on sandy and peaty soils, and more quickly when these soils are laid down to grass. Hence the mechanical action of the rains—slowly in many localities, yet surely—has a tendency to lighten the surface soil, by removing a portion of its clay. They constitute one of those natural agencies by which, as elsewhere explained, important differences are ultimately established, almost every where, between the surface crop-bearing soil and the subsoil on which it rests.

But, further, the heats of summer and the frosts of winter aid this slow alteration. In the extremes of heat and of cold, the soil contracts more than the roots of the grasses do; and similar though less visible differences take place during the striking changes of temperature which are experienced in our climate in the different parts of almost every day. When the rain falls also on the parched field, or when a thaw comes on in winter, the earth expands, while the roots of the grasses remain nearly fixed; hence the soil rises up among the leaves, mixes with the vegetable matter, and thus assists in the slow accumulation of a rich vegetable mould.

The reader may have witnessed in winter how, on a field or by a way-side, the earth rises above the stones, and appears inclined to cover them; he may even have seen, in a deserted and undisturbed highway, the stones gradually sinking and disappearing altogether, when the repetition of this alternate contraction and expansion of the soil for a succession of winters has increased, in a great degree, the effects which follow from a single accession of frosty weather.

So it is in the fields. And if a person skilled in the soils of a given district can make a guess at the time when a given field was laid down to grass, by the depth at which the stones are found beneath the surface, it is partly because this loosening and expansion of the soil, while the stones remain fixed, tends to throw the latter down by an almost imperceptible quantity every year that passes.

Such movements as these act in opening up the surface soil, in mixing it with the decaying vegetable matter, and in allowing the slow action of the rains gradually to give its earthy portion a lighter character. But with these, among other causes, conspires also the action of living animals. Few persons have followed the plough without occasionally observing the vast quantities

of earth-worms with which some fields seem to be filled. On a close-shaven lawn many have noticed the frequent little heaps of earth which these worms during the night have thrown out upon the grass. These and other minute animals are continually at work, especially beneath an undisturbed and grassy sward; and they nightly bring up from a considerable depth, and discharge on the surface, their burden of fine fertilizing loamy earth. Each of these burdens is an actual gain to the rich surface soil; and who can doubt that, in the lapse of years, the unseen and unappreciated labors of these insect tribes must both materially improve its quality and increase its depth?*

HINTS AS TO MANURES.

It is a well known fact that hoofs, hairs, feathers, skins, wool, contain more than 50 per cent. of carbon, and from 13 to 18 per cent. of nitrogen, besides sulphur, salts of lime, of soda, and of magnesia. These substances hold, therefore, the first rank, as it were, amongst manures; and, as a long time is required for their decomposition, their action may often last for seven or eight years. They yield excellent results, especially when made into a compost for potatoes, turnips, hops, hay, and, generally, on meadow-land. Hairs spread upon meadows are said to augment the crop three-fold; and the Chinese, we are told, are so well aware of the very great value of that manure, that they carefully collect the hair every time they have their heads shaved—and the operation is performed every fortnight—and sell it to their farmers. Now, the crop of hair that every individual leaves at the haircutter's yearly, amounts to about half a pound; reckoning, therefore, at 13,000,000, the number of individuals who, in Great Britain and Ireland, are undergoing the process of shaving and haircutting, we have a production of about 3,000 tons of hair—that is, of manure of the most valuable kind, since it represents at least 150,000 tons of ordinary farm-yard manure—which might be collected almost without trouble, but which, on the contrary, such is our carelessness or indolence in these matters, is, I believe, invariably swept away in our streets or sewers, and utterly wasted.—*Farmer's Manual of Agricultural Chemistry.*

ACTION OF DROUGHT ON PLANTS.

The article below, from the *Mark Lane Express*, London, could scarcely be more applicable to this meridian, if written expressly for it. We commend it to each of our readers as affording a plausible theory *why plants require so much water.* It also affords strong arguments in favor of irrigation, especially in a climate like ours, where the three summer months are usually very dry and hot.

"The specific action of drought on plants is one of the problems not yet entirely solved. Whether it is the indirect waste of moisture on the plants by evaporation, or the want of the due proportion of water necessary to build up the structure of plants, or whether it is some indirect action on the constituents of the soil, is by no means a settled question.

* In the Prize Essays of the Highland Society, (vol. 1, p 191,) the reader will find the testimony of a practical man that such was in reality the case, as observed by himself on part of his own farm in Roxburgshire.

The present season has afforded abundant illustration of the effect of want of moisture on the several plants the farmer has to cultivate; and what is more remarkable, the drought, though absolutely less than it was last year, seems to have had a far greater effect on the plants. The meadows especially appear to have suffered. In all the northern counties particularly, the grass crop is peculiarly affected. The finer and shorter grasses are absolutely either wanting, or so thin that they show the meadows to be without bottom grass. The coarser grasses are tall, but thin, and running to seed, forming no tillering stalks, and few blades in comparison to those of former years. The corn is the same—thin, stunted, and spiry in its character. There has been no tillering, no thick, matted surface. The drills have been visible up to the present period, and the stems are fast running to ear before half the usual height is attained, being also hard and yellow in color, and as different as possible from the graceful flopping blade the wheat plant usually exhibits at this period.

Now, in what specific way has this drought so acted on the plants? In ordinary vegetables, 90 per cent. of their whole structure is simply water. Hence it is easy to conceive how large a quantity of that material is necessary during their growth and development. But there was no such absolute deficiency this season. The soil always contained a comparatively large amount of moisture; the dews were often plentiful, amounting to fully as much more as any diurnal development of the plant could require; and all the tables of rain fallen in the spring of this year, we have seen, showed a larger quantity than in the corresponding months of last year. Hence it seems we must look to the abstract cause of the injury—to something beyond the mere denuding of the plant of water, as such.

We think the theory of Liebig far better established this season. The plant, to take up its elements, must have them presented to it in a state of solution. The action of rain operates to dissolve regularly and gradually the material required by the plant, both in the soil and in the rocks from which the soil is continually forming, by disintegrating the small particles existing in the land. These are being supplied to the plant by the rains as it requires them, but this year they have not been so washed out and made ready for its use. But why did not the same cause operate equally in the spring of 1852? Simply because the incessant rains of the autumn and early winter had washed out the soluble constituents of the soil, so as to leave less free material in the land by far than in the previous spring, and hence the ordinary drought had much greater effect on the plants this year than it had last.

The effect of water on plants, regularly supplied, is most wonderful. Those who have seen the Clipston water meadows, and the small and clear stream, which produce from three to five crops of grass per annum, either depastured or mown, or partly the one and partly the other, must be convinced that it is almost as much owing to the plentiful supply of water in a dry season, as to any great amount of manure held by that small river in solution, that the vast increase of grass is produced. By watering, Mr. Kennedy, of Myremill, keeps close upon a thousand head of stock on ninety acres of Italian rye-grass. In ordinary seasons, from five to nine sheep can be kept on one acre of land: the latter may be done in a dropping season, on clover lays, on well-cultivated land; but with the aid of a little artificial food, and by the application of *liquid* manure, in the shower form, by steam, Mr. Kennedy can keep fifty-six sheep per acre! Nor can we believe that this is altogether due to the manure. To that it is partly owing, doubtless; but it is by far more owing to its being watered with that manure in a soluble state, and so fit for the immediate use

of the plants. Hence he is independent of season. The water drill, to which we before alluded, is an application of the same principle; and the wonderful results of the dressing of dissolved bone liquid, in a dry season, by the Duke of Richmond, is a powerful fact in the same direction.

That it is the want of soluble manure, or, in other words, elements of plants, which is mainly the cause of the injury, is manifest from the fact that all the poorest land has suffered by far the most from the drought. The very highly manured land has sustained the least damage; while on land to which very highly soluble manures—Peruvian guano, for instance—and similar materials, have been applied, the crops are growing vigorously.

Nor let it be forgotten that the rain brings down the ammonia, which, in dry states of the atmosphere, will float undisturbed; and this failing, as well as the soluble supply below, would of course aggravate the cause of injury.

But what can now be done, with the meadows ripe, and not one half or one third of a crop? We say, free your pastures at once, and put in the whole of the stock, if rain has come, and eat up the meadows thoroughly bare. This will amply relieve the pastures, and afford them the chance of an entire new growth. The meadows, with their small produce, will soon be eaten up; and let a dressing of two or three cwt. of the best guano be then applied to them, and a beautiful new crop, and not very late, will yet be secured; the mowing machine and haymaker will soon get it, even if it should clash with the harvest; but we are clear that on all kinds of land more produce, with the present crop given in, will be obtained by such a course, and the present crop will be very acceptable of itself. The fog, or aftermath, has also every prospect of being better after thus supplying the deficiency of the year."

LIQUID MANURING.

We follow up what we have written on this subject, by the following judicious remarks of the editor of the *Albany Cultivator*, in his September number:

"*Liquid manuring* appears to be more particularly applicable to the neighborhood of towns and cities. Millions of dollars are annually wasted by the large quantities of enriching substances which are annually carried off and wasted in sewers. It has been computed that the city of London affords enough in this way to impart the highest degree of fertility to three hundred thousand acres of land; and at the same rate of calculation, New-York would fertilize nearly a hundred thousand acres. The most surprising effects have lately been obtained from liquid manure in England, far exceeding those from any other enriching application. The reason is obvious: the manure is not only reduced to the *finest degree of division*, but the water which holds it carries it through all parts of a porous soil, and forms a more perfect intermixture than could be effected by any other means; at the same time that the water performs another most important office, namely, supplying the growing plant with the amount of moisture which it so largely needs.

There is no question that a highly diluted mixture of water and manure is the most perfect state in which to apply it; and in the case of sewage-water, this mixture being already made, it can be applied in no other way. The question immediately arises, How is it to be conveyed to the land in the most economical manner? This is the most difficult part of the process, for it is far cheaper to cart a ton of solid manure than the same amount of fertilizing

materials with ten times their weight of water. A very important discussion lately took place on this subject in a meeting of the Agricultural Society of England, in which it was declared by those versed in hydraulics, and who had experience in the conveyance of water in pipes, that so great was the facility with which it might be conveyed in pipes by the agency of steam power, when compared with carting by horse labor, that the former could be effected at less than one tenth the cost of the latter. One great difficulty, however, occurred, from the fact that the liquid manure was most wanted on the dryer hills, which are least accessible, the towns being usually lower than the surrounding country; but this difficulty had been obviated by pumping up with a steam engine. Several distinguished and successful farmers had procured hydraulic apparatus for this purpose; one had placed a hydrant for every 40 acres of his land, another for every 11 acres, and another for every 3½ acres; from these hydrants a hose pipe issued, and was carried round in a circle, watering the whole surface regularly. Among these farmers was J. J. Mechi, well known by reputation to the farmers in this country, who, from a large tank, drove the liquid manure through pipes over his whole farm, employing for this purpose the farm engine erected for his mill and threshing machine.

The *London Times* furnishes the following account of the extraordinary success which has attended an experiment of this kind, and which must undoubtedly be attributed largely to this simple supply of *water*, as well as to the fertilizing influence of the manure. The statement of keeping *fifty sheep* per acre—almost ten times as many as our farmers think of pasturing—would draw rather hard on our credulity, were it not otherwise corroborated, and had we not already some extraordinary facts at hand of the enormous growth resulting from similar treatment:—

'At Myremill, in Ayrshire, Mr. Kennedy feeds under cover in the summer months, 220 large oxen, 460 sheep, 20 horses, and 150 store pigs, on 90 acres of Italian rye grass. Last summer, his house-fed sheep fattened better than in the field, and were kept on Italian rye grass for four months, at the rate of 56 head per acre! They likewise received a daily supply of steamed food. But allowing for this, we find that on this farm each acre of grass keeps about four times as much live stock as the average of the cultivated land of similar quality in England. Mr. Kennedy has attained his high state of fertility by the use of liquid manure, distributed over the farm in pipes, and applied to the surface by the force of steam, in a jet-like shower of rain. To use Mr. Mechi's graphic words, he can "increase his wet days" as he finds it necessary, and when other people's fields are parched with drought, his are glistening with perennial verdure. Having an unfailing supply of water, he can either mix it in his manure-tank with a more enriching substance, and so shower it over the land, or he can sow guano broadcast over the grass, and then wash it in dissolved; or if nothing but moisture is needed, he applies that only. No doubt such an apparatus requires a large stock both of capital and skill—the one to start it, and the other to conduct it. A most important experiment it is, however, and likely to lead to great results ere long.'

This subject is yet in the infancy of its successful application,—a stage which every useful operation must first pass through, before it can reach maturity. To what extent in practice it may yet reach, is hard to predict; but it would certainly be well worthy the efforts of enterprising men in and near cities, to provide tanks for the reception of the immense amount of wasted wealth in the form of sewage-water, and pipes for its conveyance to the large plantations occupied as market-gardens, where it is believed all judicious out-

lays would soon repay large dividends in the fine and luxuriant growth they would soon occasion."

The same writer, in reply to a question proposed by one of his correspondents, says:

"The liquid portions of the manure from cattle are greater in bulk, and richer in quality, than the same from horses. The real money value of such manure must of course vary greatly with circumstances, such as the price of the crop raised, and the manner of applying the manure. For example, a ton of manure converted into strawberries, selling at four dollars per bushel, would return more money than a ton converted into corn at fifty cents, or ruta bagas at ten cents per bushel. Again: manure carelessly applied and badly mixed with the soil, will not yield one third the return afforded from finely pulverized and thoroughly intermixed materials. Still further: the quantity and richness of manure is much controlled by the age, nature, size, condition, treatment and food of the animal which yields it.

In Flanders, where manures are well applied, and animals well fed, the urine of a single cow is reckoned at an average of $10 per annum—the solid parts are estimated at one half to three fourths of this sum. Taking the usual price of guano, $50 per ton, as the standard, the manure from a single cow, saved in the best manner, would be worth about $20. This is, however, higher than manure is usually sold, and by the common management more than half is lost.

No accurate estimate can, however, be made of the loss, when it is thrown into the barn-yard, and exposed to the weather, without knowing other particulars. As most farmers manage, by providing straw enough to absorb about one fourth of the urine, from one half to two thirds are lost; a larger quantity of straw, in connection with leaves, peat, and an occasional layer of turf, the latter being the most valuable of all as an absorbent, would save nearly the whole, even if exposed to the weather."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MR. CHAPMAN'S LAST IMPORTATION OF HEIFERS.

MESSRS. EDITORS:—By the arrival of the "Mary Carson" at Philadelphia, on the 25th of August, I received from Robert Bell, Esq., of Mosbro' Hall, Rainsford, near Liverpool, Eng., four short-horn heifers. These heifers were imported for me, by Geo. Vail, Esq., of Troy, N. Y., who, until his great sale in October last, ranked as one of our best and most enterprising importers and breeders of short-horn cattle. His importations were always from Mr. Bates' herd, or from that of Mr. Bates' tenant, Mr. Bell; and as these gentlemen always used the same bulls, their herds were nearly identical. Mr. Vail always considered the *Bates* blood *the* best in his herd; and to its introduction and continued use, in a great measure, is to be attributed his success as a breeder of short-horns. These heifers, above alluded to, were selected by Mr. Bell from his own herd, and with particular reference, with one exception, to their possessing much of the celebrated *Duchess* blood of Mr. Bates' herd. This (Duchess) family Mr. Bates considered preferable to any other family of short-horns; and the high prices which they now command seem to prove conclusively that Mr. Bates was correct in his opinion. Below I send you the pedigrees of the four heifers.

AGATE—Roan; calved Dec. 6, 1850: got by Mr. Bates' Duchess bull, 3d Duke of York (10,166); dam [Annie] by Mr. Bates' Duchess bull, 2d Cleveland Lad (3,408); g. d. [Annabella] by Mr. Bates' Duchess bull, Duke of Cleveland (1,937); gr. g. d. [Acomb] by Mr. Bates' Belvidere (1,706).

FRANTIC—Roan; calved Sept. 3, 1850: got by Mr. Bates' Duchess bull, 4th Duke of York (10,167)—purchased by Earl Ducie, at the sale of Mr. Bates' herd in 1850, for £210; dam [Faith] by Mr. Bates' Duchess bull, 4th Duke of Northumberland (3,649); g. d. [Fidget] by Mr. Bates' 2d Earl of Darlington (1,945); gr. g. d. [Fletcher] by a son of Young Wynyard (2,859).

BOUKIE—Roan; calved April 25, 1849: got by 4th Duke of York (10,167)—as above; dam [Cicely] by Mr. Bates' Duchess bull, Duke of Northumberland (1,940); g. d. [Craggs] by a son of 2d Hubback (2,682); gr. g. d. [Craggs] bought of Mr. Bates, and descended from the stock of the late Mr. Maynard.

BRIGHT EYES 3d—Red; calved June 23, 1850: got by Earl Derby (10,177); dam [Bright Eyes 2d] by Lord George Bentinck (9,317); g. d. [Bright Eyes] by Conqueror (6,885); gr. g. d. by a son of Bearl (65); gr. g. g. d. by Mason's Son of Comet (155); gr. g. g. g. d. by Wellington (683).

These heifers were all bred to *Bates'* bulls before being sent out from England.

Respectfully yours, S. P. CHAPMAN.

Mt. Pleasant Farm, Clockville, Madison Co., N. Y., Sept. 5, 1853.

AGRICULTURAL EDUCATION.

IT is one of the self-denying duties which one owes to the public, to contend against that which is good in itself, and which, under certain circumstances, would be of very great value, while existing conditions are absolutely fatal to its present success, and render it absolutely sure that money invested with the most honest and the most patriotic intentions will be essentially thrown away.

Such, in our view, are the beautiful designs laid out, as on a map, with great skill, by some of our contemporaries, in relation to agricultural education.

If designed for the Duke of Sutherland, or him of Orleans, they could not, perhaps, be improved; or if reference is had to a community of rich planters, who enjoy, *otium cùm dignitate*, as the Latins say, a life of quiet and honorable leisure, while overseers or superintendents are employed to direct every hour's labor done through the year—if they at the same time wish to oversee and direct the superintendent, and actually be, what they often nominally are, *super*-superintendents, these plans are admirably designed. But such, we apprehend, is not the condition of any of the farming communities throughout this country. Our Southern planters' sons have no taste, generally, for those duties, and, therefore, no desire to qualify themselves for a more judicious and successful management of their affairs; and comparatively few planters, perhaps, have the funds wherewith to found such institutions, and also support their sons for several years in acquiring the knowledge of which they are conscious they actually have need. Most farmers are in the same category in this business of education, in which so many of them are in reference to the cultivation of their farms. They know their deficiencies, but are too poor to begin with buying manures. Could the improved crops be made available in advance, they would go into the work of reform with zeal. But Professor

Mapes holds his 'improved superphosphates' under a lock which nothing but eagles and guineas can unfasten; and the poor farmer must remain, for the present, essentially where he is.

We are far from advocating indolence or indifference in these matters. Something must be done, and that too without much delay, or many of our farmers who are now only poor will be actual bankrupts; and many a farm, now under mortgage for half its value, will be sold under the hammer, or the mortgage will be foreclosed, and the occupant be not only stripped of his farm, but of his house also.

We look, however, for something more practicable, and requiring less outlay, than is contemplated by any of these thorough systems. We are anxious for something to relieve the classes we have just described. Access may now be had by the sons of the wealthy to the best schools of this country, or of Europe. They annually expend far more than would be required for this purpose in mere pleasure, and, therefore, the public are not very urgently called upon to provide for them.

One of the best discussions of this subject we have seen, and one of the most thorough systems proposed, is by our learned and accomplished friends of the *Polytechnic Journal*, in their September issue. But, ifwe do not read them incorrectly, they also furnish evidence that, for the masses, their splendid system would be of little practical utility. We refer to what they say of the honest, but essentially unschooled "Dutchmen" of Pennsylvania. Could our farming communities throughout the States present the same evidencé of thrift which do these "stereotyped" farmers of the Quaker State, we should be more prosperous and successful than we shall ever be under all the schools and colleges which the most ambitious and most hopeful anticipate. Let us notice what our friends say:—

"How comes it that the 'Dutchmen' of Pennsylvania, as they are generally termed, are invariably acknowledged to be good farmers? Because they have brought with them from their fatherland a system of farming requiring them to manure one third or one fourth of the lands under tillage regularly every year. These men have adhered to the mode of farming practised by their fathers and ancestors; they transplanted that stereotyped system upon the fertile region of Pennsylvania—the same system which has kept the lands of their fathers thousands of years in a perfectly productive state, and on the same soil which was ploughed by the Romans in the time of the Emperor Augustus.* We do not mean to say that the Germans of Pennsylvania farm their lands according to proper rules and the principles of agricultural science, or that their system of farming is to be imitated; or that they could not do better—far from it; they have yet much to learn; but they were wise enough to adhere to an old, well-tried system, and their fields show the result of it. Every one who visits that portion of Pennsylvania where the Germans reside will be agreeably surprised with the appearance of the fields, meadows, and those large barns and manure-heaps, the secret of their success. Every strip of land is well cultivated and tended with care; every meadow drained or irrigated. The whole aspect of their estates shows that they love and cherish the soil. They work themselves; their daughters and wives work; all work. They have little hired labor, and yet, with that small amount of labor, they produce large crops, and are very prosperous. To these 'Dutchmen' Pennsylvania owes much of her wealth, her prosperity, the high rank which she holds among her sister States, and the fortitude with which she endured the

* See Fleischmann's Report on Agriculture, in the Report of the U.S. Patent Office, 1847.

memorable financial crisis. The Germans of Pennsylvania seldom emigrate to the West, to exhaust or ruin another tract of land; and when they are *obliged* to move, in order to make their children also independent tillers of the soil, they always carry with them their industry; and their good farming has become proverbial throughout the Union.

Had the Southern planter gone to work in a similar manner; had he only now and then endeavored to remunerate his lands for the excessive cropping, with a few loads of manure; had he followed a regular rotation of crops; had he kept up a system of farming and not of exhausting, the aspect of things of our neighbors would be a different one. That ruinous system was begun by the first settlers: all wanted to get rich too fast, without reference to their successors, and the future prosperity of their adopted country. The deed is done; but it is not too late to remedy the evil. The remedy consists not in the analysis of the soil, not in the study of chemistry, not in a patent manure; neither is it in the knowledge of the fine points of a horse, cow, or bull, the production of the tallest corn, largest tobacco leaf, or a great crop of wheat, cotton, or sugar. All such knowledge and all such speculations do not strike the evil at the root."

This page of quotation contains or implies a vast deal, and, if it shows us any thing, it shows us that the "land well cultivated and tended with care," "every meadow drained," and the "little hired labor," while they adhere to the systems of their fathers beyond the sea, "requiring them to manure one third or one fourth of the lands under tillage regularly every year,"—"the same system which has kept the lands of their fathers thousands of years in a perfectly productive state,"—contain the entire solution of the problem which is set before the agriculturists of this country.

Neither these learned editors nor ourselves have less regard for education in general, nor for agricultural education, than others have, nor will we consent to be placed on a lower *platform* on this subject than the writer of the article from which this extract is taken; but the difference is this: while he proposes a thoroughly furnished college, or university even, at once, we think we must go step by step, and raise the mass of our farmers into an atmosphere where they can see more clearly what they now refuse even to examine, and furnish them also with the means for still greater advance, by their own acquired resources. In this way, ultimate success is certain. In every other, as we view the subject, nothing is certain but defeat.

WHERE THE CORN COMES FROM.

An English paper says:—It is proved by the return of the foreign corn trade in the last few years, that a change is taking place in the principal sources of the supply of food. The United States and the Baltic are no longer, by any means, our largest producers. Their yearly surplus falls short of our yearly wants, and it is from the fertile districts and fine rivers of Eastern Europe that we now draw our greatest and most inexhaustible supply. In 1841, when the total imports of wheat into this kingdom were 2,400,000 quarters, only 230,000 quarters, or about one tenth, came from Russia, Turkey, or the Mediterranean. In 1852, the total import of wheat (exclusive of flour) was about 3,200,000 quarters, of which 1,700,000 quarters came from the ports of those countries; and taking the whole import of corn at 6,750,000 quarters, that of the East was 3,500,000 quarters.

Of this quantity a large proportion is shipped at Galatz and Ibraila, and other Turkish ports, which are the natural channels for the abundant produce of Hungary, and the fertile provinces south of the Danube. Egypt also sent us in 1852 no less than 279,000 quarters in 143 vessels. M. Mongrédien points out that this large and increasing trade is almost exclusively in the hands of Greek merchants established in England, with branch houses in the Levant, and that the ingenuity and perseverance of the Greeks are displayed to an extraordinary degree by the manner in which they have contrived, in about thirty years, to found and retain this extensive commerce. The Greek firms in England amount to about 200, and the yearly amount of their transactions in the grain trade alone is computed at no less than four millions. Their business is conducted with the utmost diligence and exactness, and even in this country the Greeks successfully compete with the traders in corn from all parts of the world.

TUNNELS OF THE WORLD.

The below article on the tunnels of world was prepared by General Dearborn for the use of the Maine Legislature. It will be found to contain much useful and interesting information:

"Although scarcely any two tunnels are exactly alike, as to the strata through which they pass, the size, length, number, and depth of shafts, the quantity of water to be extracted, the climate of locality, and the lining—all of which affect the cost—and time required for the work, still a near and approximate decision can be arrived at by examining the details of those already finished, and comparing them with a proposed tunnel, if the same tools and appliances are to be used for working in both cases. If improvements are introduced, such as steam drills, cutting and boring apparatus, &c., then the cost and time will be modified in proportion to the rapidity and expense with which these machines can be made to do their work.

The machines invented for boring Hoosac Mountain, and excavating the Mount Cenis tunnel, exhibit great ingenuity; the former has been tried, and gives good results, bidding fair to answer the ends proposed; but a longer trial is required to determine its merits. The latter, it is said, will cut 22 feet in solid rock in twenty-four hours; but it has not, to my knowledge, been tested to any great extent as yet, so that we must wait further experiments before a correct opinion can be formed of its ultimate aid in tunnelling.

The tunnels enumerated have been constructed on the usual method of carrying on such works.

The constructing of tunnels for aqueducts, mining, &c., dates back to the earliest period of history. Those mentioned by Strabo, through Mount Patus, for regulating the height of the water in Copais, in Bœotia, are some of thirty stadia, equal to 3.447 miles in length, and were works of great labor. The tunnels of Egypt, and those of the celebrated Roman aqueducts, and the tunnel at Lake Albano, 6,000 feet long, cut through lava, in 398 B. C., are monuments worthy of their age.

There is a tunnel reported to have been found under an arm of the sea, near Marseilles, from Abbey St. Victoria to Fort St. Nicholas, having an arch of 60 feet span, and being 1,625 feet long, supposed to be of Roman origin. The first tunnel constructed for canal navigation was on the Languedoc canal, in 1666, planned by F. Andreossy.

France has fifty-six tunnels on her canals and railroads, thirty-six of which have an aggregate length of 45.44 miles. The longest of small size is 7.45 miles, and that of large dimensions is 3.52 miles long. The Rouen and Havre Railroad has eight tunnels; Paris and Lyons eight also.

That truly grand work, the aqueduct from the Durance to Marseilles, has three tunnels, whose total length is 10.56 miles. That through the Taillades had 7,320 gallons of water pumped out of it each minute, during a part of the time it was in progress, to carry it on to completion. There was a tunnel projected for the Picardy Canal of 8.51 miles in length, but two short ones were substituted for it.

On the German railroads there are ten tunnels. The George Stalton tunnel in the Harz Mountains is 6.48 miles long. It was begun in 1777, and finished in 1800, and cost £71,172.

Spain has some railroad tunnels. Sardinia States have a number: one at Mount Giovi, nearly two miles long, on the Genoa and Turin Railroad. There are on this railroad, in twenty-five miles through the Apennines, nine tunnels; and the road is considered one of the most difficult pieces of railroad engineering ever undertaken.

The Mont Cenis tunnel, projected for the Lyons and Turin Railroad, is one of the grandest works of this nature ever contemplated. It is to be 7.63 miles long, and 19 × 25 feet in size. The plans for it, and the machinery to work it, were designed by the Chevalier Mause, the distinguished engineer of this railroad. A board of scientific gentlemen, engineers, and geologists, were appointed to examine those plans, &c., and they decided unanimously in favor of the project. The estimated cost is $2,615,000, and the time fixed for its completion is five years. The summit of the post-road over this mountain is 2,400 feet above the tunnel; the mountain is 2,450 feet above this. No shafts are to be sunk.

In Switzerland, in Val Cristallena, the Alps are to be pierced by a tunnel for the Italian and German Junction Railroad, 3.5 miles long.

The Sömmering tunnel, through a mountain of that name in Austria, is one mile long.

Hungary has a mineral railroad tunnel, ten miles long, just completed.

England has forty-eight canal tunnels, of an aggregate length of forty miles, the longest of which is over three miles, on the Huddersfield Canal, if we except one reported eighteen miles long on the Bridgewater Canal. She has also seventy-nine railroad tunnels, forty-nine of which amount to 32.53 miles: the longest is 361 miles.

The London and Birmingham Railroad has eight tunnels; London and Dover, five; Newcastle and Carlisle, five.

A canal tunnel of five miles in length was projected for the Manchester and Bolton Canal, and one 4.5 miles long for the Portsmouth and Corydon Canal, but were not constructed.

The United States have sixty-seven tunnels on canals and railroads, the largest of which is about one mile. The details of these are now difficult to obtain. Many of them are short, however.

Baltimore and Ohio Railroad has sixteen tunnels; Parkersburg Railroad, seventeen; Hempfield Railroad, seven.

A tunnel of 4.04 miles was projected by the celebrated engineer, General Bernard, in 1825, for the passage of the Alleghany Mountains, by the Chesapeake and Ohio Canal.

In the foregoing statement there are no doubt many tunnels omitted, as I

have mentioned those only that are contained in works in my own library, with three or four exceptions.

The art of tunnelling has been so extensively practised, that they are not now looked upon by engineers and others as such formidable obstacles as they formerly were."

THE AMERICAN INSTITUTE, NEW-YORK, 1853.

This popular Institution has issued the following Programme of their twenty-sixth Annual Fair:

"October 1st, 3d, 4th, 5th, Castle Garden will be open for the reception of goods and specimens.

Oct. 6th, Castle Garden will be open for the admission of visitors, from 9 A. M. until 10 P. M., and continue the same each day (Sundays excepted) until the close.

Oct. 10th, Testing of ploughs, near Frye's Hotel, Flatbush, on the plank-road to Coney Island, at 11 o'clock A. M.

Oct. 11, Ploughing and Spading Matches, same place, 11 o'clock A. M.

Oct. 17, Special exhibition of roses and cut flowers, at 12 o'clock M.

Oct. 19th, 20th, and 21st, Cattle show at Hamilton Square.

Oct. 20th, Anniversary Address, at Metropolitan Hall, at 7 P. M. Tickets may be had at Castle Garden, or of any of the Managers.

At their Fair last year, the Managers awarded 90 gold medals; 304 silver medals; silver cups and plate to the value of $1167 25; cash premiums, in place of cups, medals, &c., $677 25; 174 volumes of books to apprentices, minors, and others; $20, and three bronze medals, the Van Schaick premium; and 175 premiums on fire-works.

The list of premiums offered for this year has been materially increased, particularly those in the Agricultural and Horticultural departments.

The annual exhibition of cattle of all breeds, and all useful farm stock, will be held at Hamilton Square, on the 19th, 20th, and 21st days of October. Hamilton Square is situated between the Third and Fourth Avenues, and Sixty-sixth and Sixty-ninth streets, four miles from the City Hall. The railroad cars and several lines of omnibuses pass it every hour in the day. Every arrangement will be made for the accommodation of exhibitors.

The Clerk will be in attendance on the ground, on the 17th and 18th days of October, for the purpose of receiving entries. Feed of all kinds will be provided on the ground, at the cheapest rates.

Competition is open for stock from any part of the United States. No entrance-money will be required.

It is very desirable that a catalogue, for the use of the judges and visitors, should be ready for delivery at an early period. It will greatly facilitate this object, if the exhibitors will send their entries, with pedigrees, &c., to A. Chandler, Corresponding Secretary, No. 351 Broadway, as early as possible.

Copies of the Premium List for the Agricultural Department may be obtained at any time, by applying at the rooms of the Institute, No. 351 Broadway, where all inquiries will be promptly answered."

Let all with one accord lend their aid to the advancement of this useful institution.

THE GREAT EXHIBITION.

The more we examine this immense collection, the more we are gratified and astonished at its extent and its excellent display. Several times we have passed through it with friends from abroad, who could devote but a short time to its examination, and we find that a rapid survey, which allows no careful observation of any one thing, consumes quite three hours, while, notwithstanding the numerous visits we have paid to the Crystal Palace, each consuming from four to seven hours, so far are we from being familiar with all its beauties, that we make new discoveries every hour we spend there. But some kind of directory is necessary for a satisfactory examination. We have also met friends there who had been over the building two or three hours alone, and with nothing to guide them in the selection of objects for examination, who were about to give up in despair, like a stranger set down in a large city, without a map to guide his movements, really seeing nothing in a satisfactory manner, while they were delighted with the few we have pointed out to them, and considered themselves well paid for the cost and trouble of the visit; and they left with a resolve to make another journey to the city whenever practicable, to complete what was so delightful in its commencement. You are often within arm's length of an object of great interest, which something less attractive prevents you from examining, and when you afterwards read the description of it, you are sorely grieved that it escaped your notice. A good descriptive catalogue, arranged in the order they occur, would be of immense advantage. The printed catalogue is systematic, but it does not answer this design.

We purpose, in a humble measure, to supply this deficiency by an enumeration and short description of many of the more interesting articles there to be seen, and *in the order in which they occur* in passing through the building. We made a very short list of this kind in our last number; but so many objects of interest have since been added; that we now go over the same ground again, naming only without describing what were then referred to.

We start from beneath the dome, and, omitting all the statuary for a separate chapter, begin with the French department, and in the first section of it from the dome on the western nave, or that leading to the Sixth Avenue entrance.

Here is the very splendid show belonging to the Government of France, the Gobelin Tapestry and ancient Sevres Ware. This kind of ware we described in our last number, when referring to the collection of M. Lahoche. The articles we are now going to describe were not then opened:

The first piece of embroidery on your right as you enter the section is Le Loup et l'Agneau, or the Wolf and the Lamb, after Desportes; a most elegant piece of art, which multitudes would mistake for an ancient painting. Then an Autumn Scene, after Leasoret, the lower portion of which we think is finer than the upper, though all parts are superb. La Lice et sa Compagnon is a most perfect representation of three or four dogs. Next, Sujet de Chasse, or the representation of the chase, with a combination of moving and of still life. Over the door-way, opposite the entrance, is a splendid picture of Mountain Scenery, representing two goats contending for a passage across a narrow bridge, on which they have met, with the

wild scenery of a mountain torrent. Near the top of the heights is a tower. We can conceive of nothing finer than this piece of embroidery. A WINTER SCENE and fine landscapes complete this series. Some of the latter are of less pretensions than those on the opposite side, and will not detain you so long. These on the left are the BEAUVAIS tapestry.

On a stand, in the centre of the court, is a most imposing vase of the ancient Sèvres ware, which will be more admired the more it is examined. The tables are covered with similar ware, plates, tea-sets, bottles, pitchers, &c. On the left, as you enter, is an elegant tea-set, having the appearance of open-work; and on the right is another which is actually thus ornamented, the ware being double. These are both very superb. Other vases in and near the corners of the court are worthy of especial notice.

Upon the tables lining the nave is an admirable collection of groups in terra cotta. Old men and children, mothers and grandmothers, beggars and the more prosperous, all are represented by the most perfect statuettes. The expression of the countenances of each is a pleasing study for a long time. Still, multitudes pass by them with scarcely a glance.

Entering the next court, as numbered in the printed catalogue, or towards Fortieth street, are specimens of

BELGIAN SUGAR AND CANDY, very fine. Here is also a VEILED HEAD, unlike others found on the Italian side, and not so beautiful; also a collection of GLASS AND CHINA, CLOTHS AND OIL CLOTHS, CHEMICALS, &c.

Still farther on we find various manufactures, including snuff, flax, cloths, &c., and cotton, woollen and silk goods, some very elegant, with shawls, gloves, hose, &c. All these are from Belgium.

In the next court we find goods from Saxony, consisting of MUSICAL INSTRUMENTS, TOILET ARTICLES, &c. Next, a handsome case of VARIETIES, from Nuremburg; a MACHINE FOR DRILLING THE EYES OF NEEDLES, very ingenious, which drew the prize at the London Exhibition; elegant scissors, shears, knives, locks, balances, &c., from the German States.

Turning to the right, we notice a bas-relief, representing ARMIN AND THUSNELDA, marble, very fine; curtains, furniture, pianos, &c. One of these is the

MECHANICAL PIANO of Mons. Debain. It is played by machinery, without the use of the keys, and renders the highest styles of opera music with admirable effect. It is a very ingenious instrument. A gentleman is in attendance to play and to exhibit its structure.

The next court, which borders on the west nave, contains the elegant wares of M. Lahoche, described in our last number. The very courteous exhibitor and his equally courteous friend who assists him, have spared us and others the trouble of many inquiries as to the portraits on their wares, by affixing names to the likenesses on the ancient Sèvres ware, of which we gave the list in our September number. Some very beautiful Cologne bottles, and bottles for various cosmetics, &c., were not specially referred to in our former description, but are worthy of being found and carefully examined. Another article, not before mentioned, is a very curious MECHANICAL TURNING CLOCK, which is worthy of especial notice.

RAPHAEL'S HOLY FAMILY, in porcelain, is also exhibited by M. Lahoche, and is most superb. So also are the small bronzes at the end of his tables.

Opposite this ware are some chandeliers, of beautifully chaste design, by Lerolle Brothers, from Paris. In one, each pendant bears a lily of pure white, contrasting with good effect the bronze or gilt of the branches. Another is ornamented with beautifully-arranged pink-colored flowers.

Near these, in the centre of the court, stands a fine bust of Louis Napoleon, and another, on the table, of Cerito, a famous dancing-girl of Paris.

The bronzes of Messrs. Lerolle are exquisitely done, and in exceedingly good taste, single or in groups.

At the entrance of the next row of courts stands a case of exquisite silk goods—French, of course—exhibited by A. T. Stewart & Co. Beyond this, which is surrounded also by silks, velvets, &c., exceedingly rich, are beautiful articles for the toilet, cushions, &c. Preserves, chemicals and pharmaceuticals, are also in this vicinity. One table, as you enter the next row of courts, is covered with specimens of bronzes, of zinc, statuettes, &c., of most excellent style and finish. Here also is a group in bronzed plaster, the AMAZON AND TIGER, much reduced in size; mechanical churns, glass filters, &c.

In the next court is a case of exquisitely fine muslin; a duplicate dress of the French Empress, containing seventeen yards, and two yards in width, is so fine that the whole can be crowded into a common-sized tumbler. Its price is 1,000 francs. It is exhibited by Gindre & Cie., Lyons. Many other elegant goods are in the same case, or are arranged near by. Bertrand's case of plaster casts is a very curious and pleasing collection.

If we now pass round to the south nave, and go through the row of courts in this same French and German department, but lining the westerly side of the south nave, we find splendid goods of very various character, including guns, pistols, swords, &c.; woollen and silk goods, of various kinds, excellent and sometimes superb in quality. Among other matters of interest is a MUSICAL TABLE. It is of mahogany, covered by a marble slab, beneath which is arranged a musical box, playing twelve pieces. It is valued at $250 or $300.

Artists of various kinds would be much interested in hundreds of entries we have not referred to. But this is all our plan will permit us to describe in this, one quarter of the lower floor of the main building.

We next purpose to visit the gallery over the ground already examined.

[*To be Continued.*]

UNITED STATES AGRICULTURAL DEPARTMENT.

We commence, in this number, a report of the Agricultural Department, of which we intend to publish full descriptions, illustrating those of especial interest, so far as we can, by engravings, until the readers of our journal shall be well posted up in every thing relating to this branch of the subject. We shall endeavor to do the same with the machinery.

That we may know what progress we make, we shall follow the order in which the several implements are located, beginning in the gallery at the Washington Monument. This does not belong to us, especially, and we are glad that it does not. It is very analogous to a new variety of fruit which some farmer might *try* to produce, by mixing up potatoes, apples, melons, peppers, mustard, and pumpkins. Were all these duly mingled in one growth, perhaps the architects of this monument might insert a block in the walls which should represent the new monster.

The first implement that presents itself to our notice is a new

IRON SIDE-HILL PLOUGH. The beam turns on a pivot, through an entire semicircle, so that the driver and the team change positions, while the plough-share retains the same position. The share, cutter, &c., are double; that is, it consists of two shares and cutters, placed back to back. The mould-board is also double, but both parts are on one side of the plough. A few inches

behind the cutter, it is divided into three pieces, two of which may be called wings, each turning on a hinge. These wings are attached one behind the other. The hinder one is covered partially by the foremost; but when the beam is swung half round, this hinder wing becomes the foremost; and each is so shaped, that when its position is reversed, it is in the proper shape and position to turn the furrow in a proper manner. It is not necessary to unhitch the team, but the holder of the plough sets the beam free of its fastening, and suffers the team to draw it round, as they resume their places in or by the last furrow. It was patented by Hall & Speir, Pittsburgh, Pa., in January, 1853.

Two Iron Ploughs, from the same establishment, are also exhibited, less remarkable than the preceding for any new feature they present, except that there is no wood-work about them, and that they are very light and manageable. The use of iron in place of wood, in very many cases in which the softer and more perishable material has been employed, seems very much on the increase.

A small Maize Harvester, or Corn Cutter, exhibited by Jacob H. Young, Mount Pulaski, Ill. It is claimed for this machine that it will harvest sixteen or twenty acres a day, with a man and a boy. It drops the bundle at the pleasure of the laborers. Its cost is from fifteen to twenty dollars.

From this small model no very good idea can be formed of its actual capacities, but to us it appears too complicated to work easily and successfully.

Hay Press, without name or description, a small model.

Golden Harvester, a reaping, raking, and bundling machine combined. A. Elliott. There are some very good points about this machine. The horse travels behind his work rather than by the side of it; and this is a great gain of power. We regard this a very important consideration. The machine is simple: a single shaft running in the line of the motion of the machine produces all its action. It is guided by a lever attached to two hind wheels, after the fashion of a rudder. Upon the shaft are cranks to which the knives are attached, and also the drums upon which the bands revolve.

Model of Trough, &c., for Feeding Pigs. This is a simple but very good invention, exhibited by R. M. Abbies, Thompsonville, Ct. In front of the pen is a swinging partition, suspended from the top by a hinge, the natural position of which is in front of the feeding-bowl. By pressure, this is swung over the feeding-bowls, and the swine are kept away from them while they are cleaned or filled. When the pressure is removed, they return to their place. Over each bowl is a sort of concave iron frame which admits the head of the swine, but not the body. Hence they must stand outside, and eat like more civilized animals.

A Reaping Machine, model; nameless; not in working order.

Forks, Hay-Cutters, and Scythes, by David J. Millard, Clayville, from Paris Furnace Company, Oneida co., N. Y. These are excellent tools.

Forks, Rakes, and Hoes, by Tuttle Manufacturing Company, Naugatuck, Ct. These are very handsomely wrought. Agency, 14 Dey street.

Horse Rake, a small model, nameless, but seems well contrived.

Tools, from Old Colony Iron Company, Taunton, Mass.

Shovels and Spades, from E. & J. Bussing & Co., very handsome.

Mop Handle, H. & J. Marsh & Co. This is a capital contrivance, but not new.

Brooms, Moore's Patent. This is designed for keeping the material of the broom tight and strong, even though some portion of it may have been *used up*. It is worthy of attention.

Horse Rake. This handsome model of a rake has spring teeth, and frees itself from stones, &c.

Hoes, by the American Hoe Company, Ct. Agents, Boyd & Keen, 11 Gold street. Some of these hoes are very massive, suited for the most unyielding soils, and are finished in the most excellent manner.

Scythes, by Mansfield & Lamb, Smithfield, R. I.

Scythe Snaths, by A. Kimball & Sons, Fitchburg, Mass.

Hand Cultivators, Hand Harrows, Horse Rakes, Cradles, Hoes, Forks, &c., by Longett & Griffin, N. Y., Agents for Oxford Hoe and Edge-tool Company.

Laverne's Machines for Raising Packages, a very good contrivance, which can be made portable or stationary. A modification of this might be applied to unloading hay. Office, 678 Sixth Avenue.

Tools, in variety, by Ralph & Co.

Curiosity. We notice on this table a Ball of Hair, four inches in diameter, one of eleven of equal size, taken from the stomach of a cow. Nothing is stated of their effects on the animal.

Horse-shoe Tiles for Draining Lands and for Cellars, an excellent article, by A. S. Babcock, Albany. Price, $12 to $18 per thousand.

Rifles for Scythes, by Edward Crossman, Canaan Four Corners.

Double Lever Churn, John O'Neill, Xenia, O.

Corn and Grain Drill. Deering & Dederick, Albany, N. Y. This drill took the prize at Utica in 1852.

Shovels, Forks, &c., by G. Gay, Pierce & Wood, and by Henry Partridge & Son, Medfield, Mass.

Kimball's Patent Shovel, with malleable iron socket, from Worcester, Mass.

Fire-escape Ladder, by Mr. Dederick. This is a very good arrangement for escaping from a house when the lower stories are on fire.

A Two-wheeled Plough. A very heavy implement, but possibly useful for certain purposes. The wheels are some 12 or 15 inches in diameter, fixed near the point of draught.

Ploughs, by Minor Horton & Co.

Steel Mould-board Ploughs. Garrett & Cottman, Cincinnati, O. It is claimed for these ploughs that they are susceptible of a much finer polish than the cast-iron ploughs; that they will scour in the most adhesive soil, and will not rust as soon as the cast iron ploughs; that they run much lighter to the team. The edges of the shares are laid with steel, and can be kept sharp. Price, from $8.50 to $15.

Mumma's Patent Corn Sheller and Apple-root Grinder.

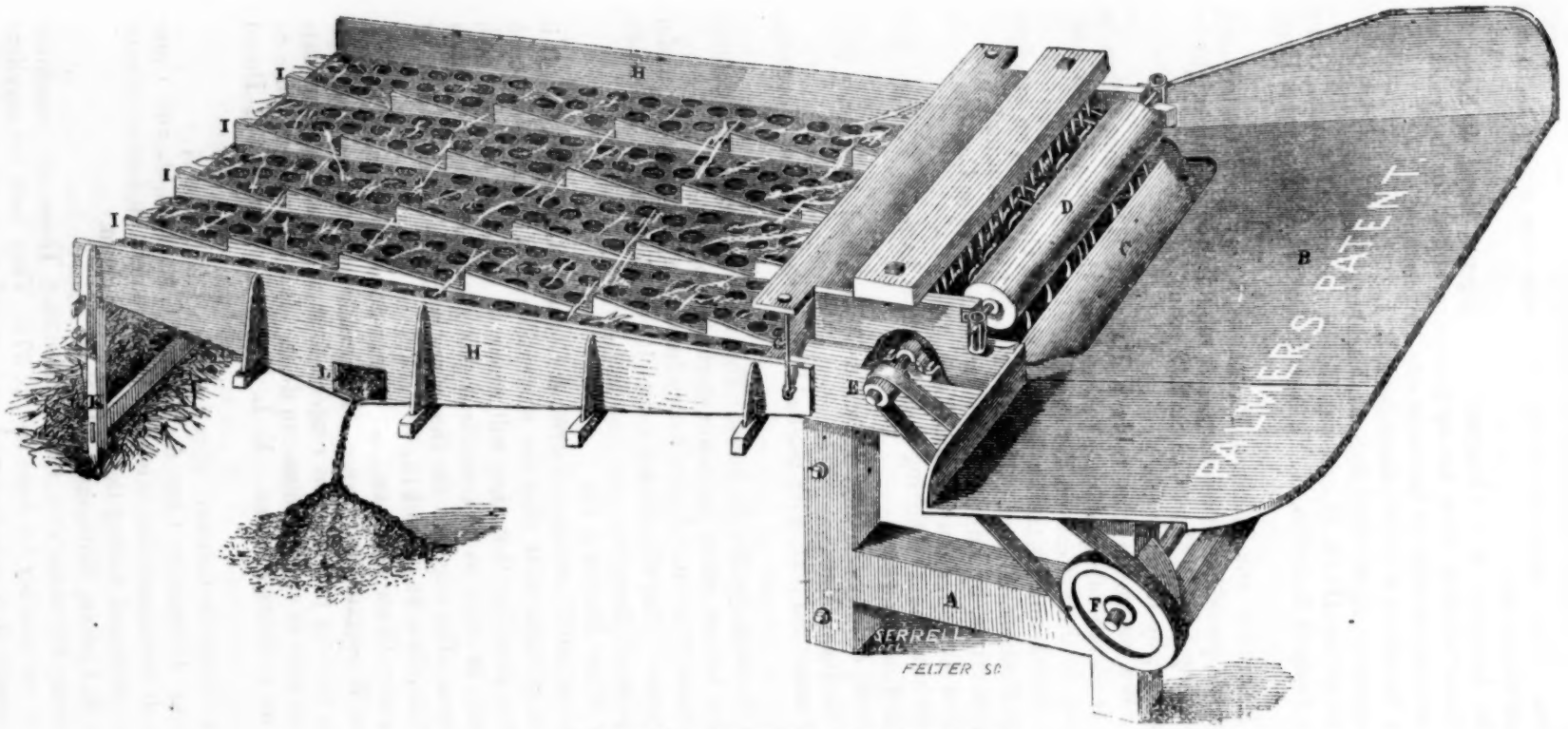
India-rubber Washing Machine. This machine combines both the pressing and the rubbing process in as simple a form as possible, and appears to do the work as well as any machine can do it. It is adapted to delicate goods as well as to coarser fabrics. E. L. Evans is patentee, 341 Broad street.

Tillingham's Premium Churn.

Improved Bran Duster, by Carr & Hughes, Cincinnati, O., and Cambridge City, Ia. It is claimed that this is an improvement on former patents. We have not the means of testing the justice of the claim.

Rakes, by A. E. Lyman, Williamsburgh, N. Y.

Reading's Corn Sheller and Grain Dryer. These two machines were described in our number for June last, p. 374. They both are excellent for the uses for which they are designed, and are of moderate cost. The ormer will shell corn as fast as a man can shovel it into the hoppers.



PALMER'S IMPROVED SPIKE THRESHER.

PALMER'S IMPROVED SPIKE THRESHER.

THE foregoing is a perspective view of a spike machine, with improvements to guard against the accidents which often have happened, from the bursting of the cylinder, or from spikes being thrown out by the centrifugal force of the machine.

These improvements are simple and effective, and consist in a change in the construction of the feed-board and cylinder, and in the addition of a protective roller, placed between the operator and the cylinder.

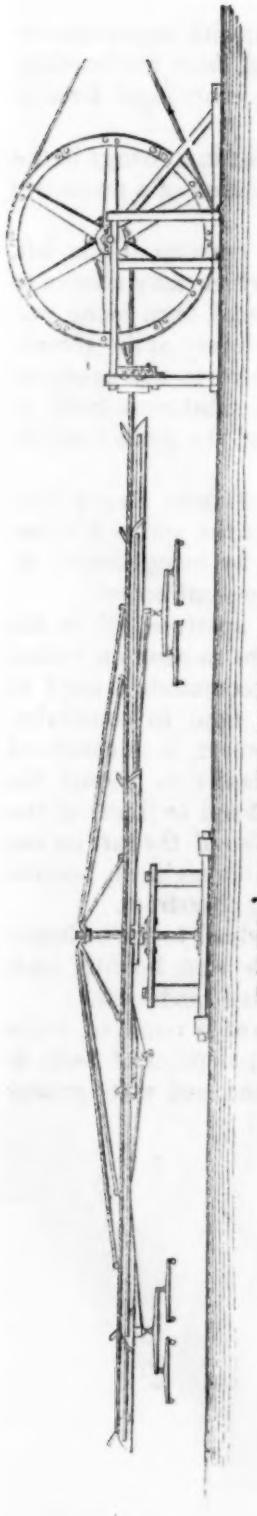
In the lower part of the feed-board an aperture or opening (C) is left, through which stones or any similar foreign substances which may chance to be held in the straw are discharged from, and are prevented from being carried into the machine; and from which result, in the ordinary spike threshers, not only injury to the machine, but oftentimes accident to the operator. This aperture is so contrived that while it allows all such substances freely to pass *out* of the machine, the easy and rapid entrance of the grain *into* the thresher is not hindered or interfered with.

The cylinder is secured against bursting by means of three strong iron bands encircling it at either end and in the middle, while the spikes are prevented from being thrown out by the centrifugal force, by being deeply inserted in the staves of the cylinder, and with a heavy, deep-cut screw.

Directly in front of the cylinder, and just above the aperture left in the feed-board, is placed a protective roller, (D,) its gudgeons moving on helical springs, which allow the roller to be elevated so as to accommodate itself to the quantity of feed given, but not sufficiently stiff and rigid to counterbalance the natural weight of the roller. This roller, however, is so contrived that it can be elevated only to a certain distance, sufficiently to *permit* the free entrance of the grain, but not so far as to allow the hand or limbs of the operator to be drawn into the machine. This roller is also of the further use to intercept any spikes or teeth which may, by any possible accident, become broken or thrown out, and prevent any accident resulting therefrom.

These improvements may also, at a small expense, be added to the ordinary spike threshers, and they will be furnished to all those who, holding such threshers, desire to retain them, and wish to have their use made safe.

By means of these improvements all liability to accident is removed, while at the same time the machine, from having an increased number of teeth in the cylinder, will accomplish more work in a given time, and with greater perfection.



PALMER'S IMPROVED HORSE-POWER.

PALMER'S IMPROVED HORSE-POWER.

THE annexed illustration gives a perspective view of Palmer's New and Improved Horse-Power, which, though originally designed by the inventor to accompany his threshing machines, (before described,) is well adapted and fitted to be used whenever power is needed, and in combination with any kind of machinery.

It is distinguished from horse-powers ordinarily in use, by being so constructed that any required length of leverage—from *twelve* to *twenty-five* feet—may be obtained and rendered available, and that two, three, or even a greater number of bands, may be worked at the same time, and thus motion be applied, at one and the same time, to various kinds of machinery. From the increased length of leverage obtained in this machine over ordinary horse-powers, the power applied is rendered much more effective; while at the same time all liability of accident to the user is removed by the peculiar manner in which the power is transferred, and which is done without the necessity or use of cogs, cog-wheels, and shafts.

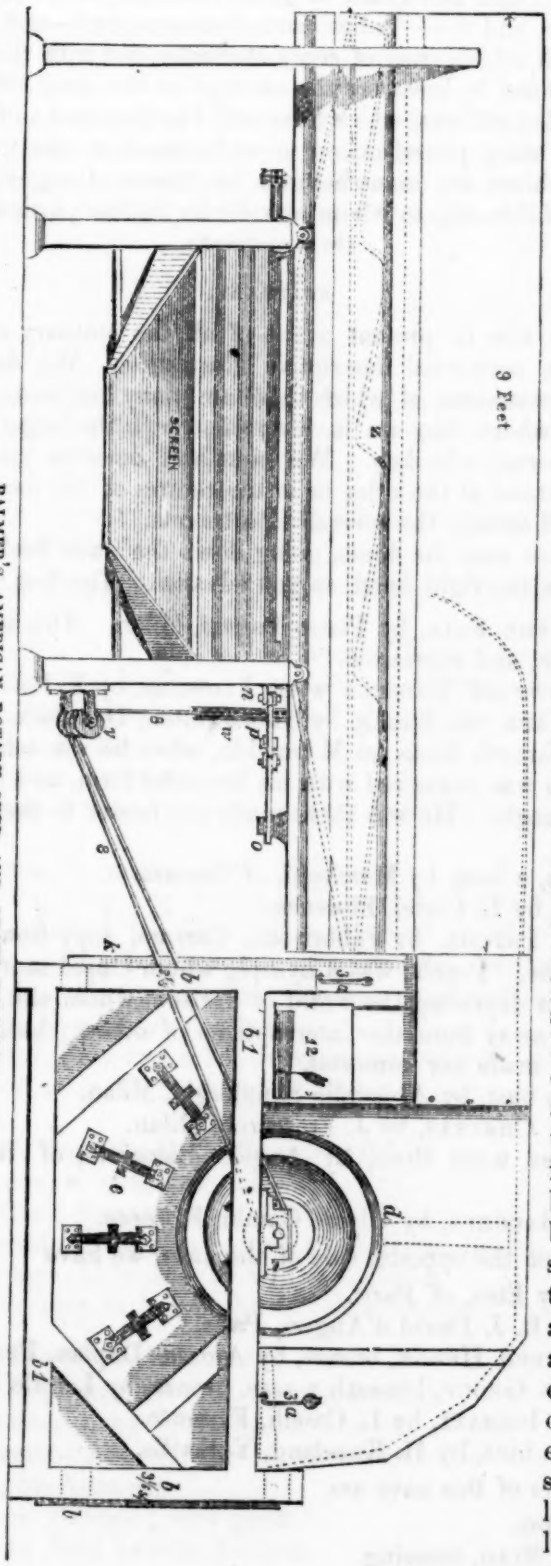
Power or motion is transferred from the horse-power, by means of bands, or chains, playing in points of support attached to the *ends* of the arms or levers, by which arrangement the power is not only used at the best advantage—length of leverage being considered—but it is also made available without a necessity for cog-wheels or shafts, and, therefore, with much less loss from friction.

By means of a series of conical pulleys on the large wheel attached to the horse-power, and from which motion is imparted to any required machinery, different velocities may be given, so that the horse-power may be adapted to different uses, where different resistances are to be overcome.

This improved horse-power is peculiarly well adapted to drive an upright or other saw, wherever their use is desired, as the velocity of the saw may be readily varied according to the character of the wood or material to be acted on; and such saws will be furnished in connection with the horse-powers, whenever they may be desired.

These powers are also simple in their construction, not liable to get out of order, and may be made (excepting the few castings, and the other iron work) by any intelligent farmer or mechanic; and they are also so framed and put together that they can easily be separated into their several parts, and be rendered compact and convenient for transportation or storage.

PALMER'S AMERICAN ROTARY SEED AND GRAIN THRESHER.



PALMER'S AMERICAN ROTARY SEED AND GRAIN THRESHER.

AMID the crowd of agricultural implements on exhibition at the CrystalPalace, we find Palmer's American Rotary Seed and Grain Thresher, a representation of which we have annexed, with its straw separator and winnower attached. This machine has all the advantages of the common flail in threshing, and not as liable to injure the grain or seed as the common spike thresher. It is a labor-saving machine, simple in its construction, not liable to get out of repair, and is so made that none of its parts can be dislodged by the great speed given to the rotaries; and thus the liability to accident, which in other threshers so often results in loss of limb, if not of life, is avoided and prevented.

DESCRIPTION.—*b, b, b*, are the frame of machine; *d*, one of the rotating flails; 12, place where the grain is fed; *e*, contrivance for regulating the adjustments of the rubbers on the inside of the flail case; *k* is the slide to change the delivery of the straw or grain; *o, p*, shaking lever, to move the screen; *w*, the wheel of the winnower, a vertical view; 8, 8, bands, transferring motion to the winnower from the thresher; Z, wire screen, to carry off the straw. The grain and straw are discharged directly over the place where they are fed into the machine. The rotaries revolve in the direction indicated by the arrows. The figures indicate the dimensions of the timbers.

The great and distinguishing feature of this thresher, however, is, that it can be so fixed or adjusted that it will thresh, with equal perfection, all the different kinds of seed and grain, as grass, flax, and clover seed, oats, barley, wheat, rye, peas, and rice—Indian corn alone excepted—and thus enable the farmer to thresh *all* his crop of *every character*, and with the same machine. This end is attained by means of the castings on the inner side of the trough or flail-case, called rubbers, which have mill-like furrowed surfaces, and which are capable of being placed nearer to or farther from the track of the rotaries. The machines are manufactured by Messrs. Coggeshall & Co., 643 Water street, of this city, to whom we refer for further particulars.

(To be continued.)

STATUARY.

We purpose now to present a list of all the statuary contained in the Palace, with an occasional descriptive illustration. We do not, of course, include all the statuettes, of which there are many hundreds, but insert a few of even these, where they are in connection with the larger forms of art, so as to give the series unbroken. We name and describe them in the order in which they stand at the sides or in the centres of the naves, forming continuous rows all around the several departments.

We commence near the dome, going down the nave leading to the Fifth Avenue, and on the right hand, as you advance. The first of the series is

Eve after the Fall, by Pietro Pagani, Milan. This is admirable, both in posture, form, and expression.

Nymph crowning Herself with Flowers, by F. Pelliccia, Carrara.

Ganymede and the Eagle, by Thorwaldsen, Denmark. Ganymede was attending his father's flocks on Mount Ida, when he was seized by command of Jupiter, who was enamored with his beautiful form, and he was carried to heaven on an eagle. He was there made cup-bearer to the gods, in place of Hebe.

Shakespere, a bust, by Marchetti, of Carrara.

Iris, a bust, by L. Cartei, Florence.

Cupid and Psyche, by Fabbricotti, Carrara, copy from antique in the Capitol at Rome. Psyche was a nymph, whom Cupid married. Venus put her to death for depriving the world of her son, whom she had carried to a place of bliss, away from the interruptions of others; but, at the request of Cupid, Jupiter made her immortal.

V. Monti, a bust, by Abbondio Sangiorgio, Milan.

Atala and Chactas, by J. Fraccaroli, Milan.

Shepherdess with Bird, by Angelo Bienaimé, of Rome, resident at London.

Drunken Bacchus, by Ulysse Cambi, Florence.

Returning, on the opposite side of the nave, we have

Damalis, by Etex, of Paris.

Racine, by R. J. David d'Angers, Paris.

The Wounded Heron, bronze, by Amant Duplan, Paris. A real gem.

A Hunting Group, beneath a vase, bronze, by Lerolle Brothers, Paris.

Agar and Ishmael, by L. Caselli, Florence.

Ericsson, a bust, by H. Kneeland, Yorkville.

In the centre of this nave are

Bronze Dog.

A Bronze Stag, reposing.

Dead Mother, Child, and Eagle, by Auguste Lechesne, Paris. The eagle is seizing the child for its prey. A painfully expressive group.

Adam and Eve after the Fall, by Professor Jerichau, Denmark, resident at Rome. An excellent group.

Eagles over a Dead Chamois. An excellent piece of art, exhibited by Aubanel, of Paris.

The Amazon and Tiger, in bronzed zinc, reduced, from Kiss.

Two Lovers going to the Fountain, executed by Tommaso Lazzerini, of Carrara, after the model of Professor Henschel.

Ganymede and the Eagle, a copy from Thorwaldsen, by Pietro Bienaimé, of Carrara.

A Fisher Boy, by Luigi Cocchi, Milan.

Herminia writing the Name of her Lover, Tancredi, by F. Pelliccia, Carrara.

Rebecca, by E. Vasse, Florence.

Guardian Angel and Child, by Luigi Bienaimé, Rome. She is defending him from a serpent which lies in his path. A very beautiful group.

Mendicant Girl, by G. Strazza, Rome. A perfect gem.

Commencing the series on the margin of the nave, where we just left it by the stairway, we find first

The Industrious Girl, by Pietro Magni, Milan. This is a gem, and absolutely perfect.

Flora del Campidoglio, a copy, by Eugenio Baratta, Carrara.

Soldier's Son, by Jorini, Milan. A capital match for the industrious girl. The little fellow has his father's hat on, which pleases him very much.

A Boy Sleeping, by Fraiken.

Recumbent Female, by same.

Children in the Woods, by Geefs. Very beautiful.

Victory, a bust.

Venus and Cupid, in plaster, by C. A. Fraiken.

Hebe of Canova, a copy, by Tommaso Lazzerini. Hebe was daughter of Jupiter and Juno, always in the bloom of youth, and called the goddess of youth. She was made cup-bearer to the gods, but was dismissed from this service to make place for Ganymede. She was employed by Juno to prepare her chariot and harness her peacocks.

Girl and Parrot, (in rear,) a bronze statuette, but very good.

Child with Shells, by C. Steinhäuser, Rome.

Amazon, a bust.

A Group, in iron, from the Royal Foundry, Berlin.

Ancient Contests, in iron, from the same.

A Danaid, by Carlo Baratta.

Hope, by Thorwaldsen, copy, in bronze, by G. Giess, Berlin.

Eve, by Bailey, copy, in bronze, by G. Giess, Berlin.

Niobide, antique, copy, in bronze, by G. Giess, Berlin.

On the opposite side of the nave are

Three Graces, in plaster, by T. R. Farrell, Ireland.

The Hunter Reposing, by T. R. Farrell, Dublin.

Flora del Campidoglio, copy, by Marchetti, Carrara.

Venus of Coss, by Nannetti.

Dancing Girl in Repose: very good.

The Emigrant, by John Lawler, London.

THE VIRGIN AND CHILD, by G. Nannetti, Ireland.

MOTHER AND CHILD.

MONUMENTAL STATUE, in plaster.

SABRINA, by William Calder Marshall, London. The readers of Milton's Comus are familiar with the character here represented. This statue is a gem.

DIANA ROVING, in plaster, by Nannetti, Dublin.

SILENT CUPID, a beautiful statuette.

THE SLEEP OF INNOCENCE, by G. Dupré, Florence.

CUPID WITH THE ARMS OF MARS, by A. Jerichau, Copenhagen, resident at Rome.

BRONZE DOG, SENTINEL, by T. F. Hoppin. He has just acquired his liberty by breaking his chain, but as he hears his master's voice, stops and listens. It is a fine figure.

AMAZON AND TIGER, by Kiss; a statue of full size, in bronze, admirable in its effect and admirable in its details. A good emblem of liberty and tyranny.

Under the base of this large group are two plaster casts, small in size, but of very great merit. One is the ANTEDILUVIAN, the other is JOHN THE BAPTIST BEHEADED. A sentimental young lady could not bear either of them; an artist would make either a study of great interest.

The centre of this nave is occupied by a

GRIEVING PSYCHE, by Luigi Bienaimé, of Rome.

HARPOCRATES, by Santarelli, Florence. Harpocrates was one of the gods: he is represented as holding one of his fingers to his mouth, and hence is called the god of silence, and is supposed to intimate that the mysteries of religion are not to be revealed to the people.

BACCHANTE, by Pelliccia, of Carrara.

THE WARWICK VASE, copy, by Marchetti, Carrara. This vase, so celebrated, is a magnificent piece of art.

THE MINSTREL'S CURSE, by Carl Muller, illustrating a German ballad.

This brings us to the east nave. The series is as follows:

CUPID IN A MALICIOUS MOOD, by Professor E. Santarelli, Florence.

HUMAN LOVE, (maternal,) by John Ernstson Bandal.

ST. JOHN, by E. Baratta, Carrara.

DANIEL O'CONNELL, (within the court,) a bust, by C. Moore, London.

FIRST WHISPER OF LOVE, in plaster, by Marshall, of London. Very pretty.

TRUTH, by Ulysse Cambi, Florence. This is a beautiful statue.

PTOLEMY LAGUS, FED AND SHELTERED BY AN EAGLE. Irish.

TWO LOVERS, by Alexander Munro.

On the opposite side of the nave, returning, are

PROFESSOR MUTTER, a bust, by Peter Reniers.

B. FRANK PALMER, a bust, by same.

WILSON MCCANDLESS, a bust, by the same.

LOVE OF A SMALL BIRD, by Nicola Marchetti, Carrara.

MERCURY OF THORWALDSEN, a copy, by Tommaso Lazzerini, Carrara.

VIRGIN AND DEAD CHRIST, (Pietà,) by Amadeo Aunger, Turin.

ESCULAPIUS, copy from antique, by Greek sculptor.

CERES, same.

The centre of this nave is occupied by the horrible statue of DANIEL WEBSTER, which is utterly unworthy a place in the exhibition, and the group of statues by Powers—

PROSERPINE—THE GREEK SLAVE—EVE—THE FISHER BOY. Proserpine was the daughter of Jupiter and Ceres. Pluto seized her as she was wandering about near her residence in Sicily, and carried her to the infernal regions, where she became his wife and queen:

"Gathering flowers,
Herself a fairer flower, by gloomy Dis
Was gathered."

She is also supposed to represent the seed corn, which lies buried in the earth, and then rises to bless mankind.

North nave:

INDIAN HUNTER, a splendid group, in bronze, by A. Ottin, Paris.
VENUS DE MEDICI, copy, by a Greek artist.
APOLLO, commonly called THE APOLLINO, same.
DANIEL WEBSTER, bust in bronze.
DIANA OF THE LOUVRE, copy, by Marchetti, Carrara.
MRS. CRAWFORD, a bust, by Thomas Crawford, Rome.
APOLLO OF THE BELVIDERE, a bust, by Marchetti, Carrara.
GENERAL SCOTT, a bust, in plaster, S. D. Jones.
POETRY, by F. Pelliccia, Carrara.
VENUS OF THE LOUVRE, copy, by G. A. Fabbricotti, Carrara. This statue is very celebrated for its beauty.

On the opposite side, returning:

CICERO, by P. Fontana, Carrara.
DANTE, a bust, by Nicola Marchetti, Carrara.
FAITH, copy of Bartolini, by E. Baratta, Carrara.
THE CHILD'S FIRST GRIEF. A beautiful work, representing a child holding in her hand a dead bird, killed by a serpent which is escaping. The nest is visible at the root of a tree, with eggs. The child is grieved almost to tears. The workmanship and design are admirable. By E. Vasse, Florence.
BRONZE FEMALE, by H. K. Browne, New-York.
DANIEL WEBSTER, a bust, by Anthony Piatti.
HUSBANDMAN'S ORPHAN, by Anthony Piatti.
SLEEPING INFANT, by Piatti.
JUPITER, a bust, copy of antique, by Marchetti, Carrara.
DANIEL WEBSTER, a statuette, by Thomas Ball, of Boston. Decidedly the best representation of this great man that we have ever seen.
THE GENII OF SPRING AND SUMMER, by F. Pelliccia. Beautiful statues. These two small statues are on the right and left of a figure representing
COLUMBUS EXPLAINING THE LOCALITY OF THE NEW WORLD, copied by Delmedico Staffetti, of Carrara, from an original executed by Costa, of Florence. The original was ordered by Abbas Pacha.

In the centre of the nave are

HON. CHARLES ALLEN, of Worcester, Mass., a bust.
LESBIA, by L'Evêque, Paris.
DR. JOHN GREEN, a bust.
THE EMIGRANT.
A BACCHANTE, A. Galt, Norfolk, Va.
SHEPHERD, a group in bronze, by Giess.

In the Italian and Austrian departments are the following:

[The reader will observe only four statues, that are by artists from Austria in the Austrian department. The propriety of this arrangement we do not understand.]

Court 6:

Four Bas-reliefs, by Jerichau, Copenhagen, resident at Rome, very superb pieces.

Sappho, a bust.

The Saviour, a bust, by C. Baratta, Carrara.

Laura, a bust, by E. Vasse, Florence.

Son of William Tell, a statue, excellent, by Pasquale Romanelli, Florence.

Heloise, a bust, very fine, by Enrico Vasse, Florence.

Cleopatra, a bust, very fine, by same.

Shepherdess, by Orlandi, Carrara, a gem.

Angel of Sacred Music, by V. Consani, Florence.

Young Augustus, a bust.

Death of Francesco Ferruccio, by Giampaoli, of Lucca, very fine.

A Vestal, a bust.

Rousseau, a bust, by E. Barratta.

Gioberti, a bust, by A. Bruneri, of Turin.

Dying Gladiator, by E. Baratta, Carrara.

Bacchante, copy of an antique, by Pietro Bienaimé, of Carrara.

Virgin and Child, bas-relief, by U. Cambi, Florence.

Court 12:

Virgin and Child, bas-relief, by Imhof, Rome.

Paris, a bust, by P. Fontana, Carrara.

Copernicus, a bust, by Marchetti, Carrara.

Gavazzi, a bust, by Guido Butti, Milan, resident in New-York.

Prayer, Antonio Galli, Milan.

Cupid leaning on a Wine Skin, by Achille Stocchi, Rome.

Hen and Chickens, excellent, by C. Buzzi, Milan.

Venus and Cupid, in bronze, (a fountain,) by C. Papi, Florence.

St. John sleeping, by Luigi Magi, Florence.

Faithful Love, (Cupid cutting his Wing,) a statuette, a gem, by E. Vasse, Florence.

Boar's Head, in bronze, very fine, a specimen of casting, by C. Papi, Florence.

The Betrothed, by P. Romanelli, Florence; a superb work.

Pius IX., a bust, copy, by Francesco Tenerani, of Carrara, from original, by his brother, Pietro Tenerani, of Rome.

Veiled Head, by G. Croff, Milan.

In the interior court:

The Redeemer, a bust, by Abbondio Sangiorgio, Milan.

Veiled Head, by Gaetano Motelli, Milan.

Religious Meditation, a bust, by Alessandro Rossi, Milan.

The Fishing Boys, Gaetano Motelli, Milan.

Flower-Girl finding Cupid among the Roses, Gaetano Motelli, Milan, a perfect gem.

The First Steps, by Pietro Magni, Milan. A mother is guiding the first efforts of her child in learning to walk. A very beautiful piece of art.

Basket of Flowers, Attilio Galli, of Viggiù.

A Woman of Chiozza, Ignazio Micotti, Milan.

Hebe and the Eagle, by Kähszmann, of Vienna. This is one of the few pieces of Austrian art among the many sculptures found in the Austrian department.

Shepherd, by the same.

Flowers, bas-relief, by Attilio Galli, Viggiù.

Cage of Cupids, Gaetano Motelli, Milan. This is one of the most beautiful and the most curious works of art in the Palace. It is cut from a single block of marble, while every part of the cage is filled with the most finished representations of little Cupids. Every face is full of expression, and the expression of each differs, in some respect, from that of others. One of them peeps out from beneath a curtain on the back side, while another has climbed upon the top.

The Redeemer, a bust, by Innocenzo Fraccaroli, Milan.

Basket of Cupids, by Gaetano Motelli, Milan.

Venus stepping into the Bath, by Hans Gasser, Vienna.

Veiled Head, by Giuseppe Rados, Milan.

Girl wreathing Herself with Flowers, by Kähszmann, Vienna.

Indolence, a bust, by Antonio Tantardini, Milan. This is labelled "Resignation" by mistake.

Sleeping Venus, statuette, by Giuseppe Rados, Milan.

Boy riding on a Tortoise, and

Boy riding on a Crawfish. Both of these are by Giuseppe Croff, Milan.

Leda and the Swan, by same. Leda was daughter of King Thespius and Eurithemis. Jupiter became enamored of her, and changed himself into a swan.

Child thrown Ashore by a Wave, by Antonio Galli, Milan.

In the French department are

Emperor Napoleon III., a bust, by Madame Lefèvre Deumier, said to be a most excellent likeness.

Fanny Cerito, bust, a dancing-girl, by P. Gayrard, of Paris.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MANAGEMENT OF MANURES.

Messrs. Editors:—In the September number of your valuable publication you have an editorial on the "Waste of Manures," which, if it were generally read and its precepts followed, would be worth more to every family, in the year, than twice the subscription price of your paper. In the country, even among prudent and calculating farmers, vast quantities of the richest fertilizers are not only lost, so far as those who have the first and lawful right to them are concerned, but they are lost in a way that makes them actual nuisances—disturbing the flow of the greatest of all blessings, individual and public health.

In our villages this waste becomes still more apparent, arising, perhaps, partly from the fact that a portion of the inhabitants have not lands to be benefited by it if saved—and it may be in part from the small quantities of land usually in occupancy by the greater number of inhabitants. So we see

that, in a majority of cases, the wash of the kitchen and the accumulations of the privy are disposed of in the easiest way possible, to get their contributions out of the way—not always out of smell or beyond the power of giving out miasmatic influence, however; and how often, in our small villages, and proportionably oftener as the size and population of the place increases, are our olfactory nerves sadly disturbed in passing the sheds of public houses or by-places, from the effluvia that arise from the deposit and waste of urine in these places—necessary, to be sure; for all populous towns must have their retired places for the benefit of strangers and passers-by. If these were more frequent, it would be a matter of great accommodation; and we have no doubt that, under a proper arrangement, they might be got up in far more decent style, and with a much better effect on public taste and morals, by the authorities of our large towns and cities, or even by individual enterprise, much to public benefit, and as a source of pecuniary profit.

As you propose, large tanks may be sunk in our villages and cities for depositing urine, and it may be incorporated with other material, so that it may be removed in carts as convenience requires; or, with a sufficiency of gypsum thrown in to retain the ammonia, it might undoubtedly be taken off in water-carts at a cheaper rate, and applied with equal benefit to the land.

In its liquid state, urine is one of the most valuable fertilizers. Chemistry says so, and, what is far better, experience tests the fact. Applied to fruit trees when they are in a dormant state, the effects which follow are of a surprising character. For the peach or plum there can be nothing better,—we know of nothing half so good. Insects seldom disturb the roots of trees over which it is applied, and the foliage of such trees presents a deepness and richness of verdure which other trees cannot exhibit. Of its effect upon the apple, pear and quince, we cannot speak with so much certainty; but from the evidence before us, and the nature of things, we cannot doubt but a good effect would be produced by its application to them. From the fall of the leaf in autumn to the bursting of the bud in spring, it may safely be applied in a crude state. The ground should be well forked in spring, that none of the choice salts deposited upon it may pass into the atmosphere.

If placed in considerable quantities around trees in late spring, or in any part of the growing season, when the spongioles are in full action, drawing in supplies for the growth and nourishment of the tree, and, like dainty children, seeking for the richest food, supposing it to be the best, its effects may be injurious, unless it is diluted by a mixture with other substances. Indeed, we have heard of gluttony and death resulting when the tree was fed with immoderate quantities of it in midsummer.

Such being its effect, let us for a moment contemplate the results which may arise if a proper and careful appropriation be made of it. In the country, almost every body owns the house they occupy, and a piece of land attached to it. In our villages there is scarcely a house but has its little ground-plot. As yet, the majority of these houses are unadorned by a single plum or peach tree, especially the latter—for, north of the Highlands on the Hudson, the idea is too prevalent that they "will not pay," while south they are raised in great quantities, but not by all who have a little land. Still, around all domicils there is a niche where the trunk of a peach tree can stand. The top, of course, will grow in the air, and require no land, and the roots will run some where. All the occupants of these houses like fruit; and well they may, for fresh ripe fruit is very palatable and very healthy.

Now we have no doubt but such people may have a plenty of fruit of their own raising, and fertilize the trees with substances which are now thrown away

and lost, to them at least. We believe, further, that the urine of one individual, carefully saved and applied to a single peach tree, for one half the time from November to April, will furnish it with all the nutriment it needs beyond that which it derives from the soil, and keep it in good health and high productiveness to a good old age.

If this be so, a family of six can easily raise six good peach or plum trees, and what an enormous supply these would yield in comparison with that which most families can now boast of! Let every family try, and see if it is not so.

We are aware we have digressed from our text—saving manures—and run into raising fruit; we have done so in application of our subject. In due time we may give another head, and further application. W. B.

Elmwood, Sept. 7, 1853.

COMMERCE AND COMMERCIAL CITIES.

The growth of commercial cities has almost always been rapid, and while increasing in size and importance, there has usually been a corresponding increase of splendor and luxury. The maritime cities of old Phenicia, their extended commerce, and their adventurous fleets, are stories of history. Alexandria and Carthage are other and not less noticeable examples. Calcutta, London, and New-York, of to-day, and San Francisco of the hour, are the modern instances of the growth of commercial emporiums. One hundred years ago, Calcutta was almost unthought of. The waste where it now stands was broken by a single trading-station of the East India Company, known as Fort William. To-day a splendid and opulent city of tens of thousands of inhabitants invites the trader and the traveller to its crowded and busy streets. London, of ancient foundation, for half a century has been growing with an accelerating rapidity, until now a fair-sized city is annually added to its borders. New-York, half a century ago, was a small town, confined to the lower part of the island. Now it stretches miles, while the railroad lines are converting the villages and counties of the surrounding States into suburbs. New-Brunswick, Paterson, and other places in New-Jersey; Morrisania, Yonkers, Tarrytown, Sing Sing, Peekskill, and other places in New-York; Norwalk, &c., in Connecticut; Hempstead, &c., on Long-Island, with all the country comprehended in the circle we have described, are rapidly filling up with tens of thousands who have their business in the great commercial emporium of the New World. San Francisco has sprung like the creation of a wand out of barren sand and bleak hill-sides, into a city of many thousands, and is doubtless to be the first or certainly the second commercial city of the American coast on the Pacific.

The growth of these commercial cities is no small item of interest to the political economist. Tyre, and her sister cities of the Mediterranean, have all passed away. Excepting Alexandria, scarce a stone remains to tell where they stood. Is there not something to be learned from their history? Is there not something taught by the rapid rise and splendid but short career of these powerful communities?

Commerce is a valuable *agent* in exchanging the industry of nations. But Commerce is not Production. All commerce, with those who carry it on, the transporter, the shippers, the horses, the railroads, the locomotives, and the ships, is a *direct tax* on the industry of those who actually labor. The

first payments made from the sales of produce, no matter in what form it is sent to market, are those of the agents, consignees, and transporting carriers. After these are paid, the account of sales is returned to the producer, minus "charges." The balance thus left is often small, and we have known that the producer has actually been brought in debt to his factor on "charges account." The more rapid and splendid the growth of commercial cities, the greater is the tax levied on the producers to pay for this splendor; and while a million of laborers live in comparative poverty, barely supporting themselves, the factors live in magnificence and luxury.

There is a commerce which is legitimate. By this we mean that traffic which exchanges our own products for that which we cannot produce. Drugs, dye-stuffs, spices, coffee, tea, ivory, and things which belong to other climates, are necessary to our refinement, comfort, and economies. But iron, wool, cloth, calico, linen, sugar, hardware, and thousands of other articles and products, we can produce or fabricate in our own country, to greater advantage than to purchase of those laborers who produce or make them abroad. For several reasons:

1st. The vast resources of national and individual wealth which are possessed by our people in their industrial power should be developed in the most diversified forms—thus to promote domestic exchanges, reciprocal intercourse, the cultivation of the arts, and the elevation of labor in our midst.

2d. The vast stores of wealth in the metals, ores, natural mechanical power, soils, and fuel, are so many elements of riches and prosperity given to us for our improvement. It is folly for us to buy copper, while we can almost supply the world. It is no wiser to purchase zinc, while we have the best deposit now known. It is waste and extravagance to buy iron, while we possess the best ores and the most magnificent deposits on the globe. So of all other things which lie at our feet, while we have the labor to produce all we want, and suffer when that labor is unemployed.

3. It is waste and extravagance to purchase foreign fabrics, on which charges, profits, and taxes are paid to foreign governments and capitalists, *paying the rents on foreign lands, and increasing the value of foreign mill-power and steam engines*, while we have better facilities and more splendid water-power at home, which are *valueless*, because we give a profitable employment to capital *four thousand miles distant*, which capital would otherwise seek investment here, and thus create wealth by imparting market values to waste lands, unoccupied mill-sites and idle laborers.

4. It is wasteful, extravagant, and pernicious to seek a market four thousand miles distant, and pay the transportation on bulky products, of small value, with all the charges, taxes, and duties thereon, and then pay the charges and duties on fabrics whose high values are comprised in small bulks—thereby paying a large tax on small outgoing, and a large tax on large incoming values.

5. It is wasteful and impoverishing to the producer to foster large commercial cities, which export and import, at heavy charges, while the building of inland and neighboring towns and cities will reduce the distance of transportation to market, diminish charges, shorten the time, multiply the varieties of products to be demanded by a neighboring population, increase the value of land by the value of a near market, and employ labor not otherwise marketable.

6th. It is wasteful and impoverishing to the country at large to centralize wealth, capital, and population in a few large cities, while, by a true system of

industrial economy, that wealth and capital could find better and more active employment in a hundred or a thousand different localities—thus equalizing wealth, distributing blessings, and conferring prosperity and happiness on hundreds of thousands who would otherwise be dependent on the caprices, the avarice, and the hazardous fortunes of vast commercial adventurers, who may at almost any moment be swallowed up in ruin.

Hence, while we have a sort of national pride at witnessing the growth of New-York and several of our large commercial cities, we deplore the fact, as it affords evidence of the luxury, the dissipation, the laxity of morals, and the uncertainty of so much splendor and show. The wisdom of to-day should lead men to look at facts as they are.

The tendency of the present policy of "free trade" is to build up commercial cities, throw capital into trade, withdraw it from manufactures, production, and the legitimate development of our stores of wealth, and, as in times long past, foster a spirit of restlessness, ambition, and iniquitous conquests. It tends to build up communities of "merchant princes," centralize wealth and capital in the hands of a few, "make the rich richer, and the poor poorer," by affording credit to the rich, and making "a nation of agriculturists," as the free traders pretend we ought to be, depend on foreign markets to sell our bread to the unpaid laborers of Europe, ground down to the earth by the commercial system of England. The free-trade policy is the deadly enemy of true democracy, and we hope the farmer and the working-man will not be long in finding it out.

OTIS'S MORTISING, BORING, AND HUB-MORTISING MACHINE.

This seems to be a great improvement upon the mortising machines with which we are acquainted. It will make 300 graduated strokes per minute, and will mortise a 4-panel door in four minutes, or two sets of buggy-hubs per hour.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

WASH TO PRESERVE APPLE TREES: CASTOR-OIL PLANTS: CHESS IN WHEAT.

Messrs. Editors:—Will some of your readers give a recipe of a wash to preserve young apple trees from being destroyed in winter by rabbits eating off the bark? We are greatly subject to this evil in this location, and are greatly in want of a remedy.

Also the best method to extract the oil from the castor-oil bean; its qualities, and the best uses for which it is adapted.

Again, can any of your agricultural patrons give us some light upon the nature and cause of chess among wheat? Most writers upon vegetable productions say nothing about it, and Webster's Dictionary is the only work in which as yet I can find any mention of it. The question is, is it wheat degenerated, or altogether a new production; or may it be said to be a *lusus naturæ*. The above-mentioned lexicographer says, the word, in the Persian language, means evil, depraved, and a useless weed. The botanical name is *Bromus secalinus*, and it abounds most in fields where the wheat has been winter-killed. It bears some resemblance to oats.

This fact is mentioned by Pliny. His words are, "Primum omnium frumenti vitium avena est, et hordeum, in eam degenerat." This change of wheat and barley into oats, he ascribes to a moist soil, wet weather, bad seed, &c. This opinion coincides with observations made in this country, as wheat is most likely to perish in moist lands, and instead of it, chess often appears. But this change of wheat into chess is now generally denied, and this opinion is affirmed by the ablest of botanists to be erroneous.

Still there is a mystery about this production of nature. Old practical farmers assert that it is wheat degenerated. Will any of your readers who have paid attention to it give the result of their experience? The questions to be answered are: 1st. Is this plant ever found growing naturally where no wheat has been sown? 2d. Does it ever appear among wheat where the sower can warrant it was not in the seed? 3d. If chess is sown, will it produce chess again, and not alter, and become, if possible, still further adulterated? A solution of these queries, with any other information from experience and observation, would be an accession of light upon the subject.

Wisconsin, September 12, 1853. R. S.

HORTICULTURAL.

Cultivation of the Calceolaria.—It has often been to me a matter of great surprise that the large flowering, or, as they are generally called, *herbaceous* calceolarias, are not more cultivated. You may visit, in this neighborhood, a dozen gentlemen's gardens, and not see more than a dozen plants of this beautiful section of calceolarias, and those few but miserable, half-starved, half-choked specimens, which, for the credit of both the gardener and calceolaria, would be better on the rubbish-heap.

If you inquire the cause why they are not grown, ten out of twelve persons will confess "that they are beautiful things;" but, says one, they are so subject to the green fly; another says, they are so bad to winter—I invariably lose them at that season; a third says, that they die as soon as they have done blooming; and one good gardener told me the other day, "If a person gets them to do well once in his lifetime, he has had his share of good luck." Now, in answer to the first, are not geraniums, cinerarias, and a host of other plants, which these men "grow respectably," subject to the green fly? And will not the smoke of tobacco, with which he kills the fly attacking his geraniums, kill the fly which is on calceolarias? As to their being hard to winter, it is more fanciful than real. If a person attempt to keep the "old plants," it may be true; but if cuttings are stuck in in August or September, and be potted in four-inch pots in October, and kept in a cold frame until Christmas, then placed on a shelf in the green-house "near the source of ventilation," and not kept *too wet*, not more than one in a hundred, if even that, will go off in winter.

Propagation.—Select a place shaded from the midday sun, say under a north wall or hedge, (not under the drip of trees;) spread six inches of rough cinders or coal-ashes over the space requisite to hold the number you want, then put on six inches of the following compost: leaf-mould, loam, and silver sand, in equal quantities; the whole passed through a fine sieve. Let the *rough* be place next to the ashes, and over all this put half an inch of silver sand; water the whole; place on the land lights to mark the places. Take

young shoots, as above mentioned, in the beginning of September, prick them in the prepared bed, and place over them the glasses; keep them close, syringe them frequently, and not many will fail to grow.

Time for Potting.—Pot the cuttings, when rooted, in 4 or 5-inch pots to winter in. In February give them a shift into 6 or 7-inch pots, and when the roots reach the outside of this soil, put them into their blooming-pots, say from 8 to 12-inch pots, according to the probabilities of the plant.

Soil.—For wintering, loam and leaf-mould, one part each, and half a part of sand; for February potting, loam and leaf-mould, one part each, sand and rotten dung, half a part each, and for final potting add more dung.—*Floricultural Cabinet.*

Covent-Garden Bouquets. — All who have visited or are acquainted with London, must have observed the exceeding beauty and taste with which the bouquets of Covent Garden are arranged, and the art which must be employed in forming them; and it has been an object of curiosity to many how such an arrangement is obtained. Until we set all our faculties of observation to work, we were equally as ignorant of the subject as any of our readers at the Land's End could be, but, after a little perseverance, we at last arrived at it. The process is as follows:

Procure a quantity of the finest copper wire, such wire as is used in the artificial flowers which decorate the interior of ladies' bonnets. It is with this that all the bouquets are tied; there is no string or matting made use of. Let a portion of this wire be kept in a coil for tying, but let a portion of it also be cut into lengths of about six inches. Having decided what the device of the bouquet is to be, and the flowers of which it is to be composed, let one of these flowers form a centre-piece, or "foundation," as the ladies say when they begin knitting a purse. This centre-piece forms, as it were, the centre of the circle, and all the other flowers are to be arranged in concentric circles round it. One end of the coil of wire is fixed to the stalk of the centre flower, and every single flower which is added is secured by a twist of the wire, much in the way we have seen boys tying a whip on the end of a stick. These bouquets are not formed of large branches of flowers, such as a great truss of a scarlet geranium, or a spike of a hyacinth, but single flowers, or florets, or bells, only are used. To supply the want of a long stalk in such cases, to bind them by, the six-inch lengths of wire are twisted round the short stalks of the florets or bells, and these serve in place of stalks. Camellias, also, are furnished with these artificial stalks, when the natural one is too short; and when the bouquet is completed, the stalks of the flowers are in fact a bundle of wires. It is thus that so much device is obtained, which could not be had by using large bunches or trusses of any particular flowers.

Sowing Seeds.—Fill the seed-pots half way up, at least, with drainage; then with soil, within half an inch of the rim—the finest next the surface; press it down firmish, not too much; then thoroughly water them, or soak them by se ting them in a tub of water. Let them drain thoroughly in an open place, until the surface begins to get a little dry; then press it level, gently, with the bottom of a flower-pot, or, better still, with a round piece of wood, say three to five inches in diameter, with a large nail or pin fixed to its centre to hold by. Spread the seeds evenly on this surface, and then cover with fine light sandy soil, no deeper than the thickness of the seed; so that for small dusty seed the slightest dusting of sand will be necessary, or nothing but another gentle pressing.

The young plants will not want light until they are up; and the moisture already in the soil will be sufficient to vegetate all quick-growing ones, if prevented evaporating. To effect this object there is no simpler or better plan than covering the mouth of the pot with inverted saucers or flats of a similar or larger size. Enough of air will thus penetrate to insure germination, but not enough to dry up the moisture. When, however, the soil does get too dry, it must be watered or soaked again afresh; and in delicate cases, it will be safest to set the pots in water, as high as within an inch of the seeds, and allow it to remain until all below is thoroughly soaked. In common cases, a sprinkling on the surface will be sufficient.

Remove the saucer whenever the seeds appear; but, in small delicate varieties, it will be advisable to place a square of glass over the mouth of the pot, and then, by degrees, elevating the glass on one side, before exposing the tender things to the full draught of air in the green-house. Rest assured that an ounce of attention to these trifles will be more satisfactory than some bushels of unavailing regrets.—*Cottage Garden.*

PEDIGREE OF ARABIAN HORSES.

In our article on the Arabian Horse, given a few weeks since, we omitted the manner in which their pedigrees are made out; and as it is a matter in which our readers may feel some curiosity, we take from Mr. Layard's late work the following:

"Amongst men who attach the highest value to the pure blood of their horses, and who have no written pedigree—for among the Bedouins documents of this kind do not exist—such customs are necessary. The descent of a horse is preserved by tradition, and the birth of a foal is an event known to the whole tribe. If a townsman or stranger buy a horse, and is desirous of having written evidences of its race, the seller with his friends will come to the nearest town and testify before a person specially qualified to take evidence, called 'the cadi of the horses,' who makes out a written pedigree, accompanied by various prayers and formularies from the Koran, used on such occasions, and then affixes to it his seal. It would be considered disgraceful to the character of the true Bedouin to give false testimony on such an occasion, and his word is usually received with implicit confidence."

THE NATIONAL HORSE-SHOW

Will come off at Springfield, Mass., beginning on Wednesday, October 19, and continuing four days.

The Committee state that it is designed to be a National Exhibition, and inducements will be offered which, it is hoped and expected, will bring out horses from all sections of the Union, and from our Canadian neighbors on the north. The Committee have assurances already, from various quarters, that this will be the case.

The Committee have made arrangements with several of the railroads centring there to bring all horses designed for exhibition *free of charge;* and it

is hoped that a similar arrangement may be made with railroads at a distance.

The exhibition is designed for purposes both of show and sale—considerations which combined must prove immensely attractive.

Premiums are offered for the best horses, ranging from $200 down to $25, to be awarded to the best stallions, geldings, breeding-mares, matched horses, fancy horses, colts, farm or draught-horses, ponies, &c. The largest premium ($200) is offered for the best stallion of seven years old and over.

George Dwight is President of the Society. The ground selected for the exhibition is Armory Square, on the hill; a place, says the *Springfield Farmer*, very well adapted to the purpose.

THE PRODUCT OF TOBACCO.

In a late number of *Blackwood* appeared an interesting and instructive essay upon "Narcotics," from which we extract the following account of the tobacco plant, and estimate of the usual product throughout the world:

"The tobacco plant is indigenous to tropical America, whence it was introduced into Spain and France in the beginning of the sixteenth century, by the Spaniards, and into England half a century later, (1586,) by Sir Francis Drake. Since that time, both the use and the cultivation of the plant have spread over a large portion of the globe. Besides the different parts of America, including Canada, New-Brunswick, the United States, Mexico, the Western Coast, the Spanish Main, Brazil, Cuba, St. Domingo, Trinidad, &c., it has spread into the East, into Turkey, Persia, India, China, Australia, the Philippine Islands, and Japan. It has been raised with success also in nearly every country in Europe; while in Africa it is cultivated in Egypt, Algeria, in the Canaries, on the Western Coast, and at the Cape of Good Hope. It is, indeed, among narcotics what the potato is among food plants—the most extensively cultivated, the most hardy, and the most tolerant of changes in temperature, altitude, and general climate.

We need scarcely remark, that the use of the plant has become not less universal than its cultivation. In America, it is met with every where, and its consumption is enormous. In Europe, from the plains of sunny Castile to the frozen Archangel, the pipe and cigar are the common solace among all ranks and conditions. In vain Pope Urban VIII. thundered out his bull against it; in vain our own James I. wrote his "Counterblaste to Tobacco." Opposition only excited more general attention to the plant, awakened curiosity regarding it, and promoted its consumption.

So in the East—the priests and Sultans of Turkey and Persia declared smoking a sin against their holy religion, yet nevertheless the Turks and Persians became the greatest smokers in the world. In Turkey the pipe is perpetually in the mouth. In India, all classes and both sexes smoke. In China the practice is so universal, that 'every female, from the age of eight or nine years, wears as an appendage to her dress a small silken pocket, to hold tobacco and a pipe.' It is even argued by Pallas, that the extensive prevalence of the practice in Asia, and especially in China, proves the use of tobacco for smoking to be more ancient than the discovery of the New World. 'Amongst the Chinese,' he says, 'and among the Mongol tribes, who had the most intercourse with them, the custom of smoking is so general, so frequent, and has become so indispensable a luxury; the tobacco

purse affixed to their belts so necessary an article of dress; the form of their pipes, from which the Dutch seem to have taken the model of theirs, so original; and lastly, the preparation of the yellow leaves, which are merely rubbed to pieces, and then put into the pipe, so peculiar, that they could not derive all this from America by way of Europe.'

Leaving the question of its origin, the reader will not be surprised, when he considers how widely the practice of smoking prevails, that the total produce of the tobacco grown on the face of the globe has been calculated by Mr. Crawford to amount to the enormous quantity of two millions of tons. The comparative magnitude of this quantity will strike the reader more forcibly when we state that the whole of the wheat consumed by the inhabitants of Great Britain—estimating it at a quarter a head, or in round numbers at twenty millions of quarters—weighs only four and one third millions of tons; so that the tobacco raised for the gratification of this one form of the narcotic appetite, weighs as much as the wheat consumed by ten millions of Englishmen. And reckoning it at only double the market value of wheat, or twopence and a fraction per pound, it is worth in money as much as all the wheat eaten in Great Britain.

The largest producers, and probably the largest consumers of tobacco, are the United States of America. The annual production, at the last two decennial periods of their census returns, was estimated at—

1840, - - - - - - - - -	219,163,319 lbs.
1850, - - - - - - - -	199,752,646 "

being about one twentieth part of the whole supposed produce of the globe.

One of the remarkable circumstances connected with the history of tobacco, is the rapidity with which its growth and consumption have increased in almost every country, since the discovery of America. In 1662, the quantity raised in Virginia—the chief producer of tobacco on the American shores of the Atlantic—was only 60,000 lbs.; and the quantity exported from that colony in 1689, only 120,000 lbs. In two hundred and thirty years, the produce has risen to nearly twice as many millions. And the extension of its use in our own country may be inferred from the facts that, in the above year of 1689, the total importation was 120,000 lbs. of Virginian tobacco, part of which was probably reëxported; while, in 1852, the quantity entered for home consumption amounted to 28,558,753 lbs., being something over a pound per head of the whole population, and to this must be added the large quantity of contraband tobacco, which the heavy duty of 3*s.* per lb. tempts the smuggler to introduce. The whole duty levied on the above quantity, in 1852, was £4,560,741, which is equal to a poll-tax of 3*s.* a head."

RAILROAD OPERATIONS.

THE GREAT WESTERN RAILWAY in Canada, leading from Windsor (opposite Detroit) to Niagara, is now complete about eighteen miles from Windsor, and it is intended to finish the whole by the 1st of January next. The whole distance, 280 miles, (nearly a straight line throughout,) is to be laid with compound rail, and, it is predicted, will be one of the best railways on the American continent. The wire bridge over the Niagara is in a good state of progress, and when the whole is completed, the time from Detroit to New-York city will be made in twenty hours.

There are now in course of erection at the dépôt some very large buildings: one, intended as a machine-shop and engine-house, is 145 feet by 164, and will hold twelve locomotives, besides all the machinery necessary for repairing. Another building will be commenced immediately, which will be 84 by 150 feet, will contain three divisions, so as to guard against fire, and is intended as a freight-house. These, with what are already erected, will be all actually required to open the road, but a number of others will also be erected as soon as mechanics can be got to undertake the work.

Milwaukie and Mississippi Railroad.—The *Argus and Democrat*, of Madison, Wisconsin, says: "Mr. A. L. Cantlin, a man of great wealth and still greater credit, has entered into satisfactory bonds to complete the road to Madison by the first of January next, and to Prairie du Chien by the first of January following thereafter."

This looks like earnest; and if Galena does not look out, she will not have the first car from the lakes.

Buffalo and Alleghany Valley Railroad.—The interesting ceremony of breaking ground on the Aurora route took place yesterday afternoon at the village of Aurora. Several hundred of the citizens of that place, a number of our citizens, and several railroad men from other places were present.

Alexandria, Loudoun and Hampshire Railway.—The surveys of this important work are being pushed forward with commendable energy, and thus far with highly satisfactory results. The Alexandria *Gazette* states that Mr. Bowie, the engineer in charge of the second surveying-party, has ascertained that the Blue Ridge can be easily passed at Key's Gap, at a grade of fifty-two feet to the mile. Having completed his surveys to the Shenandoah river, he is now running his line eastwardly through Hillsborough. The party hitherto operating in Fairfax county, having about closed their route as far as Goose Creek, will shortly be transferred to the Blue Ridge at Snicker's Gap. The route to Goose Creek will be almost a perfect air-line, with exceedingly favorable grades. There are five surveying-parties in the field; two east and three west of the Blue Ridge.

The Oakland and Ottawa Railroad.—The iron for this road is bought, the right of way for most of it is secured, and the contract for its construction entered into. These things make the completion of the road certain. The necessary stock has been taken, and we are informed that the laborers to build the road will in a few days be at work at different parts along the line.

Indiana and Illinois Central Railway.—The Board of Directors of this Company met at Decatur, Ill., on the 10th of August, and confirmed a contract for the construction and equipage of the entire line from Indianapolis to Decatur, with Messrs. M. C. Story & Co., of New-York. The contractors furnish 70 per cent. of the entire amount necessary to construct and equip the road, only requiring the company to raise 30 per cent. Twenty-two thousand dollars per mile includes every thing, except ballasting, and the work is to be completed by the first of December, 1855. Before the work can be commenced, however, about $300,000 of additional stock must be raised at home.

Covington and Lexington Railroad.—This work is making very rapid and satisfactory progress. The road is now opened about twenty-eight miles from Covington, and regular freight and passenger trains have been put on for this distance. By the first of September the road will be completed some twenty miles farther, to Falmouth, the shire town of Pendleton county. At this point, the centre of a large trade will be reached. The grading of the road to this point is completed, and is nearly so to Cynthiana, sixty-four miles from Covington. The entire work of grading is so far completed that the whole line will be in readiness for the rails as fast as they can be laid. This is being done at the rate of one half mile per day, and which will be continued, with good weather, till the road is completed. The cost of the work thus far is within the least estimates of the company.

Mississippi and Missouri Railroad.—This great work is fairly under way. Every thing is now in such shape, that the parties, who have built more railroads within the last two years than any other company of men, can say that it shall go through immediately. In one year, the iron horse will run to Iowa City.

MECHANICAL RECORD, ETC.

The Metropolitan Hotel, New-York, was opened to the travelling public on the 1st day of September, 1852. It was finished and furnished throughout with a degree of magnificence which, up to that time, had never been attempted in any city in the world, and has not been surpassed since. The arrivals and departures have averaged more than one thousand per week, and such has been the desire to secure even a temporary habitation at the Metropolitan, that frequently more than one hundred cots have been spread for weeks in succession. The wages of employees range from two shillings to five dollars per day. This will give a pretty good idea of the expenditures under this head alone. The laundry of the house is, probably, the most extensive of any in the world; four thousand pieces are washed daily, and in an emergency, fifteen minutes suffice to wash, dry, iron, and deliver linen for occupants of the house.

The commissary department of the Metropolitan is a very important one. Among the leading articles of consumption we notice:

Beef, 418,000 lbs.; lamb and mutton, 3,500 head; veal, 150 head; fish and lobster, 110,000 lbs.; oysters and clams, 626,000.; poultry and game, 171,000 head; ham and pork, 91,000 lbs.; butter and cheese, 65,000 lbs.; eggs, 780,000; milk and cream, 204,000 quarts; flour and corn meal, 2,800 bbls.; fruits and vegetables, value, $20,000; brandy and other liquors, 6,322 gallons; champagne, 21,160 bottles; sherry, Madeira, &c., 22,912 bottles; claret and white wines, 18,942 bottles. This is independent of malt liquors, cordials, cooking wines, &c. The beef consumed last year in this house required a drove of one thousand head to supply. When we consider that this number was required for one hotel in this city, we can form a pretty good idea of the immense herds it must require to supply such a population as New-York contains.

The gross cash receipts of the Metropolitan Hotel, for the year ending September 1, 1853, were $500,000. This is independent of wear and tear, which is by no means a small item, particularly with such splendid and expensive furniture and appointments. The cost of heating the house and the gas consumed, during the year, was $14,600. Croton water rent, $1,000. Six stages and twenty carriages are constantly employed in transporting passengers to and from the hotel.

Relative Purity of Different Descriptions of Artificial Light.—Professor Frankland, of Manchester, has given the following as the comparative purity of different descriptions of artificial light.

Quantity of carbonic acid and heat generated per hour, by various sources of light equal to twenty sperm candles:—

	Carbonic acid.	Heat.
Tallow,	Cubic feet 10.1	100
Wax,	8.3	82
Spermaceti,	8.3	82
Sperm oil, (Carcel's lamp,)	6.4	63
London gases, (coal,)	5.0	47
Manchester gas,	4.0	33
London gas, (Cannel,)	3.0	33
Boghead hydro-carbon gas,	2.5	19
Lesmahago hydro-carbon gas,	2.5	19

Professor Frankland adds:—"The two objections most frequently advanced against the use of gas in dwelling-houses are the deterioration of the air by the production of carbonic acid, and the evolution of so much heat as to render the atmosphere oppressively hot. It will be seen from the comparison exhibited that in these respects even the worst descriptions of coal gas are, for an equal amount of light, superior to all other illuminating materials; whilst, with the better descriptions of gas, three or four times the amount of light may be employed with no greater atmospheric deterioration."

INVENTIONS.—The dates of the following inventions may be of some convenience to our readers for reference. They have been taken from *The Louiston Farmer and Mechanic:*

Glass windows were first used in	1180
Chimneys in houses,	1236
Lead pipes for conveying water,	1252
Tallow candles for lights,	1290
Spectacles invented by an Italian,	1299
Paper first made from linen,	1302
Woollen cloth first made in England,	1331
Art of painting in oil colors,	1410
Printing invented,	1440
Watches made in Germany,	1477
Variation of compass first noticed,	1540
Pins first used in England,	1543
Circulation of human blood first discovered by Harvey,	1619
First newspaper published,	1630
First steam engine invented,	1649
First fire engine invented,	1663
First cotton planted in the United States,	1759
Steam engine improved by Watt,	1766
Steam cotton mill erected,	1782
Stereotyping invented in Scotland,	1785
Animal magnetism discovered by Mesmer,	1788
Sabbath-school established in Yorkshire, England,	1789
Electro-magnetic telegraph invented by Morse in	1832
Daguerreotype process invented,	1839

NEW MANUFACTURING TOWN.—A letter from Moultonborough to a Boston paper says:

"There is a fine water-power in this town, which has been recently purchased by a company from Boston, and a machine-shop and foundry are soon to be built, under the direction of an agent of Seth Ames & Co., the present proprietors of the location. The company was incorporated by the last Legislature as the Red Hill Manufacturing Company; and if all the reports are true, the little village known in this vicinity as 'Moultonborough Falls' is soon destined to become a second Lawrence. So may it be."

IMPROVEMENT IN GRIST MILLS.—The *Worcester Spy* speaks of improvements in the manner of pecking mill-stones by which their capacity for grinding corn can be doubled. The editor of the *Spy* saw it applied to a mill in Worcester, and the result of its application was, that a bushel of Northern corn was ground in a minute and a half, and that an old-fashioned mill, with a single run of stones, with the improvement, will grind *forty-six bushels an hour.*

PERCUSSION-CAPS SUPERSEDED.—A new composition has lately been invented by Messrs. Winiwartier & Gersheim, of Vienna, for the purpose of superseding the ordinary percussion-caps, and, in many instances, the gunpowder charge also. The most prominent features of these gun-primers, as the composition is called, are the absence of a metallic coat or cover, and their uniform explosive power, the materials being of such a nature that, after a detonation, no residue whatever is left behind. The materials which form the new composition are fulminating mercury, chlorate of potash, and sulphide of antimony, the dangerous properties of which ingredients are diminished by the application of collodion, which is used as a cement; and it is the ingenious employment of this substance which constitutes the chief peculiarity of the invention.

MENDING GLASS.—Melt a little isinglass in spirits of wine, and add a small quantity of water. Warm the mixture gently over a fire. When mixed by thoroughly melting, it will form glue perfectly transparent, and which will reünite broken glass firmly, neatly and invisibly. Lime, mixed with the white

of egg, forms a very strong cement for glass, porcelain, &c., but it must be done neatly.—*Scientific American.*

Ether as a Motive-power.—The results of the experiments with ether as a motive-power are attracting much attention in France; and if the published accounts are correct, the application of etherized vapor as a motive-power is a most important movement. A late number of *Galignani's Messenger* gives the following account of a report of experiments on board the steamer Du Trembley:

"This report, which is from a commission appointed by the authorities, states that an enormous economy of fuel is obtained by the new system and the apparatus of which M. Du Trembley is the inventor. The consumption of coal on board the Du Trembley is declared to have been only 1 kilogramme 11 dec. to 1 kilogramme 16 dec. per horse-power and per hour, whereas the consumption by the best steam engines on the usual principle is 4 kilogrammes. This great economy is, adds the report, very little affected by the outlay for ether. The great danger which previously existed in the use of ether by escapes from the joints, has, it is asserted, been entirely removed. This discovery, which has now stood the test of several long voyages, will cause a total revolution in steam navigation, for it will enable vessels to have a very large additional space for cargo, which is one of the great advantages promised by Capt. Ericsson's hot air engines, and the etherized vapor has a great superiority over the latter, as the rate of speed is the same as with the ordinary mode of steam navigation, with a much larger consumption of fuel, whereas, as yet, the speed obtained by the Ericsson engine is very much below that obtained by steam; consequently, whatever is gained by economy of fuel as regards hour for hour, is lost by the additional time required for a voyage, thus increasing at the same time the additional expense of the wages of the crew, the increased consumption of provisions, and the increase of wear and tear."

The American Alarm Lock is the latest novelty in the way of invention we have noticed. It is in the main a combination lock, enclosing a bell, so that any fingering or picking at the key-hole, even with the proper key, causes the ringing of a sharp, shrill alarm. This bell, if preferred, may be located away from the lock—in the bed-room of a watchman, cashier or sub-treasurer, if you please, so as to give him instant notice when any one meddles with the lock.

The Worth of Trees and Railroads.—We learn from the *Caledonian* that six pine trees standing on a lot near Island Pond, some hundred and fifty or more miles from the seaboard, were recently sold for the handsome little sum of five hundred dollars. Verily the railroads do increase the value of lumber. Ten years ago, these majestic pines, for masts, would not have sold for ten dollars.

High Price for Stock.—We have noticed recently the arrival at New-York of several herds of pure-blood stock, imported by different Societies in the Southern and Western States, for the purpose of improving the breeds of stock among the farmers in those States. One lot was said to have cost in England over $50,000. A sale of some of this stock, imported by the Northern Kentucky Importing Association, was had in Bourbon county, Ky., on the 18th inst. The prices paid were high. The purchasers were put under obligations not to remove the stock from the State for one year. The following are some of the prices paid:

A white bull, calved in May, 1850, cost in England $660, sold for $3,005. Diamond, roan—calved in June, 1850; cost $630, sold for $6,001. The Count, roan—cost $525. sold for $2515. Orontos, red and white—calved September, 1851; cost $630, sold for $4,525. Fusileer, roan—cost $375, sold for $4,475. Challenger, roan—calved January, 1852; cost $450, sold for $4528. Cows and heifers went in the same proportion. Mazurka, dark roan, calved August, 1851, cost $600, sold for $3,050. Three South Down bucks sold for $755, $480, $340, and three ewes for $350, $180, $230, and a Cleveland bay stallion—the only horse imported—$2,800! The profits of the company from the sales amounted to $32,976.

THE BIGGEST TRAIN.—The locomotive Salamander brought in the largest train of loaded freight cars yesterday that was ever drawn over the Central Road. The train numbered over one hundred loaded cars, and was over one third of a mile in length. It was mostly loaded with wheat, its capacity being 20,000 bushels—and was all picked up at Marshall, and this side of there. Within the last forty-eight hours the receipts of wheat at the Central dépôt have been nearly 40,000 bushels.—*Detroit Advertiser, Aug. 11th.*

A CEYLON OX-CART.—A correspondent of the *Boston Journal*, writing from Ceylon, thus describes a vehicle which he found on an island whose sixteen-lettered name we will not stop to write:

"On reaching the shore of Poongkoordetovoo—which jaw-breaking name, by the way, with its *sixteen* letters, is spelt in the Tamil language by the use of *six* characters only—we found an ox-cart waiting to help us on to the house of the catechist, a distance of about four miles. The ox-cart is the only one in the island, and this too, where the population in 1840, the census says, was 3700! It would be thought by an American farmer a great curiosity, as well as the exceedingly diminutive oxen which drew it, whose bodies were almost literally covered with the marks of the branding-iron. These marks are thought by the people to be very beautiful, and they regard them also as tending much to the health of the ox. The wheels of the cart are not much more than half as far apart as is usual with American carts, and the length of it was so contracted that it was not without inconvenience that even two of us could ride. It was covered over with an *ola* mat, and that protected us from the rays of a vertical sun. This was much better than to be walking with the king of day, in his own region, pouring down his rays directly above our heads."

PATENT TIMOTHY AND CLOVER SOWER.—This is a very desirable and ingenious hand implement for sowing clover and timothy seed. It is a simple hopper, or a long, trough-like-box, of any convenient length, with a zinc bottom perforated with holes at equal distances. The seed is distributed by a notched rod, which is vibrated by means of a lever attached to the top of the hopper. It sows the seed accurately, and is so arranged as to sow any desired quantity from two to sixteen quarts per acre. It is a very neat and valuable contrivance for the easy, rapid, and perfect performance of a labor which is otherwise very difficult.

CURIOUS CALCULATIONS.—The ocean, accepting the supposed average depth of it as one thousand feet, contains 29,000,000 of cubic miles of water; and to fill its basin would require all the rivers of the earth pouring their waters into it for forty thousand years. The amount of heat received from the sun every year, would suffice to melt a crust of ice thirty-two feet thick, enveloping the whole earth. According to the technical reckoning, the solar heat which annually raises the sea-water in the form of vapor, corresponds to the enormous sum of sixteen billions of horse-power.

NEW-YORK AS IT IS—FOR STRANGERS.

JULLIEN is about closing a most triumphant series of concerts. New-York has never before witnessed such perfection of orchestral music.

MAX MARETZEK is just commencing a series of operas at Niblo's, with the best promise of success, with Steffanone, Salvi, Marini, Beneventano, &c., and a powerful chorus.

The RAVELS are still at Niblo's, as funny as ever.

TWO GIRAFFES are to be seen at Barnum's Museum. These animals are very great curiosities, elegant in form, graceful in many of their movements, and unlike every other animal we have ever seen. Go and see them by all means. They are very seldom to be seen in this country.

NIAGARA FALLS.—Numerors views of this wonder of the world are to be seen at Hope Chapel, and will repay the visitor.

The BARONESS DE BERG gave her second grand concert a few evenings since, assisted by the ablest talent in the country, Salvi, Marini and Paul Julien. She is a very accomplished pianist. She cannot thunder on the wires like one of our sex, but is smooth and finished in every respect, and has entire command of the keys. She abundantly deserves success.

SIGNOR BLITZ is here also, with his five hundred learned canaries, doing most wonderful things.

PERHAM'S SEVEN MILE MIRROR.—This famous panorama is now in New-York. It gives a better view of the country through which it passes, than any other extended panorama we have ever seen. Gentlemen well-known through the country give their public commendation of it. The offer of nearly $90,000 in "gifts" may look like what is called *humbug*, but we know Mr. Perham so well that we are confident he will carry out his part of the business precisely as he promises. See his advertisement.

Other exhibitions before mentioned are still open.

NEW BOOKS.

Manual of Elementary Geology; or, The Ancient Changes of the Earth and its Inhabitants, as illustrated by Geological Monuments. By Sir Charles Lyell, M.A., F. R.S. Reprinted from the fourth and entirely revised edition. Illustrated with 500 woodcuts. New-York: D. Appleton & Co., 202 Broadway. 1853. pp. 512. $1.75.

An edition of 2000 copies, printed in January last, having been disposed of, and a call made for a still further supply of this standard work, the Messrs. Appletons have here given us a volume as finished in execution as it is authoritative in matters of science. It is furnished with a copious index. No work now published on this subject can claim precedence of this.

Philosophy of Sir William Hamilton, Bart., Professor of Logic and Metaphysics in Edinburgh University. Arranged and edited by D. W. Wright, Translator of Cousin's History of Modern Philosophy. For the use of Schools and Colleges. New-York: D. Appleton & Co. 1853.

This handsomely-executed volume contains all that Mr. Hamilton has published on the subject of Metaphysics, except part of an unfinished dissertation. His notes in his edition of Dr. Reid have been used in making up this work. The notes of the editor are chiefly confined to pointing out references to other parts of the work, though some of them are of great value. It is by no means of the less value, that our able and judicious editor allows his author to explain himself.

Elements of Agricultural Chemistry and Geology. By James F. W. Johnston, M.A., F.R. S. S.L. and E., &c., &c. With a complete Index and American Preface, by Simon Brown, Editor of the New-England Farmer. New-York: C. M. Saxton. 1853. Sent by mail to any part of the United States for $1.

This book is exactly what it professes to be. It is the work of a thorough scholar, and this edition is by an able editor, while the publisher has also done his work well, (though it would have been improved in appearance, had the paper-maker used a little more chlorine.) We know of nothing superior to this, if it has its equal, in the same compass. It is perfectly reliable in every department.

The Progressive Farmer: a Scientific Treatise on Agricultural Chemistry, the Geology of Agriculture; on Plants, Animals, Manures, and Soils, applied to Practical Agriculture. By J. A. Nash, Principal of Mount Pleasant Institute, Instructor of Agriculture in Amherst College, and Member of the Massachusetts Board of Agriculture. New-York: C. M. Saxton. 1853. pp. 254. Sent by mail at 50 cents.

This small manual contains a chapter of 45 pages on Descriptive Chemistry; 30 pages on the Geology of Agriculture; 20 pages Vegetable Physiology; 45 pages on Animals and their Products, Milk, Butter, and Cheese, with Modes of Feeding; the

Manures occupy 40 pages, and the closing chapter is on Practical Agriculture. Mr. Nash thoroughly understands himself, and has made an excellent book, which would prove itself of great value in the hands of any farmer who would be governed by its directions.

The Humorous Speaker; being a choice selection of amusing pieces, both in prose and verse, original and selected; consisting of Dialogues, Soliloquies, Parodies, &c. Designed for the use of schools, families, &c., &c. By Oliver Oldham. New-York: Newman & Ivison, 178 Fulton street. 1853. pp. 408.

This selection contains the compositions of J. G. Saxe, Stevens, Dickens, Hawthorne, Colman, Pierpont, Bulwer, Moore, Garrick, Hood, Haliburton, Holmes, and a long list of other writers, of more or less note. Persons of every taste can find something here to please them.

The Claremont Tales; or, Illustrations of the Beatitudes. New-York; Robert Carter & Brothers. 1853. pp. 363.

This handsome little volume contains eight Stories or Tales, "A humble mite dropped by a mourner's hand," designed especially to interest the young. It is eminently worthy the attention of religious parents.

The A B C Primer and the A B C Song Book. These are two little unpretending volumes, well designed for the instruction of children in the rudiments of music. The style is perfectly appropriate, the system is good, and in all respects it is just suited to the wants of teachers of schools and of private classes. It is executed in capital style and convenient form, (as usual,) by Messrs. Hall & Son, Broadway.

The Illustrated Magazine of Art is also on our table. We read it with great interest. It fills, and with ability, a place in our periodical literature which would otherwise be entirely blank.

The Educator is also a very useful magazine, by the same publisher, 17 Spruce street.

Harper's Magazine continues to maintain its high reputation. It is worthy of all commendation.

Putnam's Magazine makes its issues as regularly as the month comes round. It has an able corps of writers. The author of the "Letters from Newport," &c., must be careful, or he will be in danger of large draughts on his strong-box for broken buttons and torn button-holes. He is very 'cute as a comic writer.

Illustrated Record of the Crystal Palace, Nos. 3 and 4, is equal to its predecessors.

The Horticulturist for September was received from the agents, Messrs. Newman & Ivison.

List of Patents Recently Issued.

FROM AUG. 9 TO SEPT. 7.

G.W. Baynes, Thomas Hinty and Minter Jackson, of Glenville, Va., for Improvement in Bedstead Fastenings.

William Beach, of Philadelphia, Pa., for Improvement in Meat Tenderers.

John Binder, of Chelsea, Mass., for Improvement in Hinges for Folding Bedsteads.

P. F. Charpie, of Mount Vernon, O., for Improvement in Gun Locks.

Thomas Grossley, of Roxbury, Mass., for Improvement in Printed Carpets.

B. F. Delano, of Chelsea, Mass., for Improvement in Rubber Brace.

M. B. Dyott, of Philadelphia, Pa., for Improvement in Facing Buildings.

A. W. Graheart, of Beallsville, Ohio, for Improvement in Machines for Preparing Spoke Timber.

A. H. McKinley, of Higginsport, Ohio, for Improvement in Socket for Auger Handles and Braces.

Jacob Mumma, of Mount Joy, Pa., for Improvement in Draught Apparatus of Seed Planters.

E. K. Root, of Hartford, Ct., for Improvement in Drop Hammers.

Wm. Van Anden, of Poughkeepsie, New-York, for Improvement in Trip Hammer.

By J. P. Schenkl (assignor to J. P. Schenkl & A. S. Saroni,) of Boston, Mass., for Improvement in Breech-Loading Fire-Arms.

W. H. Babbitt, of Waynesburgh, Pa., for Improvement in Hill Side Ploughs.

A. G. Coes, of Worcester, Mass., for Improvement in Screw-Wrench.

W. & S. G. Coleman, of Providence, R. I., for Improvement in Ship Block.

A. C. Gallahue, of Alleghany City, Pa. Antedated Feb. 18, 1853, for Improvement in Machinery for Pegging Boots and Shoes.

Gibson North, of Philadelphia, Pa., for Improvement in Oven Doors of Cooking Stoves and Ranges.

A. R. Tewksbury, of Boston, Mass., for Improvement in Boat or Scow.

Henry Stanton, U. S. A., for Improvement in Discharging Breech-Loading Fire-Arms.

Luther Atwood, of Boston, Mass., for Improvement in Processes for Purifying Alcohol.

J. P. Moinier and P. H. Boutigny, of Paris, France, for Improvement in Generating Steam; patented in France, January 18, 1853.

J. B. Duff, of New-York, N. Y., for Improvement in Soap-Cutting Machines.

M. J. Gardner, of York, Pa., for Improvement in Oscillating Steam Engines.

Peter Horn, of Hagerstown, Md., for Improvement in Seed Planters.

F. B. Parker, of Queensville, Ind., for Improvement in Hay Rakes.

Milton Roberts, of South Levant, Me., for Improvement in Arrangement of Cutters for Turning.

Samuel Vansyckle, of Little York, N. J., for Improvement in Grate Bars.

Lettie A. Smith, of Pineville, Pa., for Improvement in Butter Workers.

W. M. Warren, of Watertown, Ct., for Improvement in Railroad Car Seats.

L. A. B. Walbach, deceased, late of the U. S. A., for Improvement in Boring Cannon.

Zachariah Allen, of Providence, R. I., for Improvement in Counterpanes.

Henry Ritchie, (assignor to S. C. Thompson, G. W. Westerfield, and Henry Ritchie,) of Newark, N. J., for Improvement in Padlocks.

Snow Magoun, of Newton, Mass., (assignor to E. N. Moore and C. H. Crosby, of Boston, Mass., for Improvement in Cutting and Bevelling Printers' Rules.)

Jonathan Foreman, of Boston, Mass., (administrator to E. W. Foreman, deceased, late of New-Rochelle, N. Y., and assignor to Henry W. Sears, of New-York, N. Y., for Improvement in Diving Bells.

E. S. Snyder, of Charlestown, Va., for additional Improvement in Machines for separating straw from grain. Original patent dated June 13, 1848.

R. R. Finch, Jr., of New-York, N. Y., for Improvement in Stove Pipe Collar.

Thomas S. Gore, of Jersey City, N. J., for Improvement in Stoves.

Benjamin Irving, of Green Point, N. Y., for Improvement in Steam Boilers. Patented in France, May 12, 1853.

John Krauser, of Reading, Pa., for Improvement in Cider Mills.

O. S. Leavitt, of Maysville, Ky., for Improvement in Hemp and Flax-Breaking Machines.

William H. Mitchel, of Brooklyn, N. Y., for Improvement in Machines for Distributing and Composing Type.

Frederick Nishwitz, of Williamsburgh, N. Y., for Improvement in Grain Harvesters.

Samuel Darling, of Bangor, Me., for Improvement in Grinding and Shaping Metals.

Andrew Ralston, of West Middletown, Pa., for Improvement in Saw Mills.

Stephen B. Ruggles, of Boston, Mass., for Improvement in Machines for cutting Sheet Metal.

Daniel Winslow, of Westbrook, and Perley D. Cummings, of Portland, Me., for Improvement in Paper Files.

Charles Weston, of Salem, Mass., for Improvement in Machines for Splitting Leather.

William Wigston, of New-York, N. Y., for Improvement in Apparatus for Purifying Gas.

Elliot Savage, (assignor to Franklin Roys and Edward Wilcox,) of Berlin, Conn., for Improvement in Machinery for Cutting and Bending Metallic Discs.

Elijah Valentine, of Palmer, (assignor to Abel Bradway, of Monson, Mass.,) for Improvement in Shingle Machines.

James T. Asbury, of Taylorsville, N. C., for Improvement in Straw Cutters.

Philos Blake, Eli W. Blake, and John A. Blake, of New-Haven, Conn., for Improvement in Nut Crackers. Ante-dated March 6, 1853.

James Barnes, of Franklin, N. Y., for Machine for Edging Leather Straps.

Victor Beaumont, of New-York, N. Y., for Improvement in Printing Presses.

Wm. Compton, of New-York, N. Y., for Improvement in Piano-Fortes.

Henry Hunt, of Brooklyn, N. Y., for Improvement in Sealing Preserve Canisters.

Jos. Linder, of New-York, N. Y., for Improvement in Horse Collars.

John Moyle, of Martinsburg, Va., for Improvement in Saw Cutters.

Charles Montague, of Pittsfield, Mass., for Improvement in Printing Presses.

Stephen Meredith, of Erie, Pa., for Improvement in Feed Apparatus to Gas Generators.

James Spratt, of Cincinnati, Ohio, for Improvement in Bottle Fastenings.

W. W. Spafford, of Boston, Mass., for Improvement in Machinery for Planing Metals.

Gideon B. Smith, of Baltimore, Md., for Improvement in Counterfeit Coin Detector.

Henry L. Weeds, of Hannahatchie, Geo., for Improvement in Cotton Gins.

Thomas Warner, of Chicopee, Mass., for Improvement in making Twisted Gun Barrels.

Benjamin Irving, of Green Point, N. Y., for Improvement in Paddle Wheel.

Thomas Allison, of Milton, N. Y., for Improvement in Straw Cutters.

L. H. Davis, of Kennet-Square, Pa., for Improvement in Corn Shellers.

Porter Dickinson, of Amherst, Mass., for Improvement in Corn Shellers.

Stephen Morse, of Springfield, Mass., for Improvement in Iron Car Brakes.

Hiram Sands, of Cambridge, Mass., and Gary Cummings, of West Derby, Vt., for Improvement in Brick Machines.

Samuel H. Turner, of Brooklyn, N. Y., for Improvement in Printers' Ink.

ADVERTISING DEPARTMENT OF THE PLOUGH, THE LOOM, AND THE ANVIL.

WATER WHEELS.

THE Subscribers offer for sale "Jagger's Improved French Turbine Water Wheel," which they believe to be unrivalled. Circulars and Tables relating to the same may be obtained at this office, or will be forwarded to any one desiring them.

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A. SAUL & CO.,

In inviting the attention of their Patrons and the Public in general to their very extensive Collection of

Fruit and Ornamental Trees, Shrubs, &c.,

Would respectfully inform them that the stock which they offer for sale the coming spring is unusually fine, both as regards quality of trees, variety of kinds, &c., &c.

The soil and climate of our Hudson Highlands have rendered proverbial the success of the trees sent from here to all parts of the Union; and the accuracy and precision so indispensable in the propagation of fruit trees for which this establishment has long been celebrated, render errors in nomenclature of rare occurrence.

They have propagated in large quantities, all the *leading standard* varieties which are proved best adapted for general cultivation, especially those recommended by the American Pomological Society, as well as all *novelties*, both of *native* and *foreign* origin.

To particularize within the limits of an advertisement would be impossible; they refer to their General Catalogue, a copy of which will be sent to all *post-paid* applicants, on enclosing a Post-office stamp.

The following comprise a portion of their Stock, and are all of a fine growth: viz:

Pears in over 400 Varieties, both Standards on their own Stock for orchard culture, and on the Quince for Dwarfs, Pyramids, and Quenoucle for Garden Culture.

Apples in over 300 varieties, both Standards and Dwarfs. Also, Cherries, both Standards and Dwarfs, Plum, Apricot, Peach, Nectarine, and Quince trees in ever y variety.

Grape Vines, both Native and Foreign, for Vineries. Also, Gooseberries, 50 best Lancashire Varieties; Currants, Raspberry and Strawberry plants, of all the leading and known kinds, together with Sea Kale, Asparagus, and Rhubarb roots.

Ornamental Trees, Shrubs and Vines, both deciduous and evergreen, suitable for street and lawn planting, embracing all the new and rare Conifers, Weeping Trees and Shrubs of recent introduction.

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Herbaceous plants: A large collection of Peonies, Phloxes, Campanula, Jonstemon, Œnothera, &c., &c.

Dahlias and bedding plants for the parterre and flower garden, in large quantities and varieties.

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Newburgh, Feb. 20, 1853.

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5 Pianos, worth $500 each, - - -	2,500
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Specimens of the Pianos can be seen at the Music and Piano Store of HORACE WATERS, 333 Broadway.	
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Oct. '53, 1y.

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Oct., '53.

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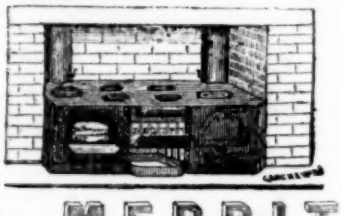

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